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AND
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JANUARY, 1888.

SURRA; OR PERNICIOUS ANÆMIA IN THE LOWER ANIMALS.

BY R. W. BURKE, M.R.C.V.S., A.V.D., JUBBULPORE, INDIA.

To say a very little on the vast subject of the pathology of *Surra* and its classification is all that will be attempted at present, as a writer must be guided in selection of any phase of a subject, not so much by looking for what is most important, as by the current of thought at the time, and, at this time, who is not drawn into the question of the pathology of *Surra*?

The question apparently remaining unanswered now is, What is *Surra*? If it is due to an excess of development of the parasites found in the blood of animals suffering from *Surra*, has that disease any equivalent in the human subject, and what is its pathology? as I believe this question has never been satisfactorily answered before.

The most important fact to determine appears to me to be, not merely the presence of the parasites, and their morphological characters, but to show their precise significance and the part they play, if any, in the production of the disease. Mr. Steel has viewed the subject, so far, more especially with reference to the anatomical peculiarities of the parasites found in this disease, a study which has been elaborately gone into by specialists in England and America, and by Dr. Crookshank (*Journ. Micr. Soc.*, Ser. 2, Vol. vi., 1886) and Prof. Wm. Osler (*Brit. Med. Journal*, 12th March, 1887) in particular. I do not think I need dilate, therefore, on this subject any farther than to show that we have not yet considered the pathology of the disease called *Surra*, apart from the presence of the parasites described by Inspecting Veterinary Surgeon Dr. G. Evans many years ago. This seems strange, seeing that the disease has been known for many years

on the continent of Europe as the equine form of Pernicious Anæmia described by several authors.

Among continental veterinary surgeons there seems to be unanimity as to the proper place for this disease of the lower animals, the malady being recognised now to be Pernicious Anæmia. This unanimity does not appear to have made itself felt up to date in India. Many still seem to think that Surra must always remain an obscure disease, known only by the presence or absence of the parasites. The clinical characters of the disease, however, contain many features of diagnostic value, and which afford correct classification. The disease has a pathological equivalent in Pernicious Anæmia of man—has a similarity of history and results, as may be seen by a comparison of these in the two classes of patients mentioned.

Mr. Steel has duly corroborated Dr. Evans' statements; but he leaves the facts essentially where Dr. Evans left them. He does not deny that the pathology of the subject should be more thoroughly investigated, though the suggestion put forward by him that it would be found to be equine Relapsing Fever (*Official Report on Surra*, 1884) has not been justified by the facts. The only argument Mr. Steel brings forward for considering this disease to be equine Relapsing Fever is, that after a certain period of apyrexia, the fever returns; but it does so again and again for a prolonged period, *viz.*, of six weeks to two months, or more, which is *not* the history of Relapsing Fever, and is characteristic certainly of Pernicious Anæmia, not only in the human subject, but in the lower animals equally. The inordinate rate of mortality from this disease is also opposed to the history of Relapsing Fever, and more characteristic of Pernicious Anæmia.

A point of interest Mr. Steel has noted in the case of Surra in India, and other veterinary surgeons have done in that of Pernicious Anæmia seen in Germany, is the well-worn, but mysterious subject, the paroxysms of increase of temperature, the so-called "Anæmic Fever" of writers on Pernicious Anæmia in the human subject. (*Practice of Medicine*, 1881, by M. Charteris).

Zschokke, also, it is well-known, has assigned a prominent place to this fever, which he found to be of an intermittent type in the horse (*Schweizer Archiv für Thierheilkunde*, Bd. 25, 1885), and Fröhner has likewise noted a marked rise in temperature on the fourth day, which, with slight remissions, remained high till death (*Archiv für Wiss. u. Praktische Thierheilkunde*, Bd. 12, 5 u. 6 Heft, 1886).

Periodicity, which is perhaps the most characteristic feature of this disease, is, after all, but an uncertain guide; for all febrile diseases, and those due to micro-organisms in general, have more

or less definite or regular periods of diminution or exacerbation.

The marked anæmic conditions, observed both *ante* and *post-mortem*, the leucocytosis, fatty degeneration of the muscles, liver, spleen, kidneys, and other organs, the general hæmorrhages, and the chronic state of fever—which end in death in so many cases—leave no doubt as to the nature of the disease.

The short facts are that, if we compare the several features of Pernicious Anæmia with those of Surra, the identity is very plainly apparent. When we include a broader horizon and consider all the clinical peculiarities, or those features by which we most readily recognise the disease, we find abundant evidence of identity between Surra and Pernicious Anæmia in the horse.

Now, with regard to the parasites in Surra, to which I attach importance. The only point especially to note is that, besides the organism described by Dr. Evans and named after him as the *trichomonas*, or *hæmatomonas Evansi*, there is sometimes found another, a bacillus, and which I believe to be more or less common, though not specially connected with the disease. These two organisms are not always found together ; one or the other may be absent.

The same bacillus was found associated with Beri-Beri in Burmah ponies by Dr. Wallace Taylor (*Report on Beri-Beri*, or *Kákke*, 1880), a disease marked by paralysis of the hind quarters and extremely fatal, symptoms which have been remarked also in Pernicious Anæmia of equine patients described by German veterinary surgeons (*Archiv für Wiss. u. Praktische Thierheilkunde*, Bd. 12, 5 u. 6 Heft, 1886).

Has the organism in question any connection with disease, or is it a special organism only associated with it, and whose life-history is not yet determined ? are questions which cannot be considered as settled. It is certain that these comparatively new phases of disease in our animals open out an almost illimitable area for researches, and may, I trust, lead to the suppression of many of those repeated outbreaks which have baffled all our combined efforts.

We are proud to know that veterinary surgeons who have served in India have already made some advance in the knowledge of this disease, but we must readily and gratefully acknowledge the heroic self-sacrificing and successful labours of Dr. Griffith Evans and Mr. Steel chiefly and especially.

The difficulties in elucidating many questions associated with our subject are great. It is desirable to learn the state of things peculiar to this disease in the human subject first, and yet a want of practical acquaintance with the latter renders this well-nigh

impossible ; and the same remark attaches to most of our diseases, which at first seem peculiar or unique in veterinary practice. The analogy between many diseases yield to inquiry such as has been mentioned, and I anticipate that our experience is alike in this case, that we all recognise a closer relationship between the human and equine form of this than was formerly done.

M. Netter shows (*Archives de Medicine*, 1884) that two of the micro-organisms found in the alimentary canal, in its normal state, are also found, up to a certain distance, in the bile-duct. He asks whether, under certain conditions, these micro-organisms may not pass from the bile-duct into the blood, and thus be the cause of serious lesions. The micro-organisms found in the blood and in the bile are the staphylococcus pyogenes aureus, and a bacillus which gives rise to culture colonies of an opaque white colour, and very rapid in growth. These two micro-organisms, however, are not always found together ; one or the other may be absent. If the infection is due to the staphylococcus, the rectal temperature of the animals experimented on rises to 105·8°F. If, on the other hand, it be due to the bacillus, the rectal temperature falls to 98·2°F.

Professor Ebstein has recently described a form of Chronic Recurrent Fever, which he considers to be a new infectious disease. The disease begins with feverish attacks, which cease after a time, and recur after a definite interval ; so that pyrexia and apyrexia alternate with a regularity which is not seen in any other disease. Each attack lasted on an average from thirteen to fourteen days, the apyrexia from ten to eleven days ; so that from the height of one attack to the corresponding period in the next, the interval was about twenty-four days. Treatment usually had no effect. Pel, in Amsterdam, has seen the same disease. He at first thought it was an irregular form of Typhoid Fever. The *post-mortem* examination always showed the spleen and the retro-peritoneal, mesenteric, and bronchial glands enlarged. Professor Ebstein, however, thinks that we give the same name (Pseudoleukæmia) to two different diseases, of which one has a febrile course, whilst in the other there is either no fever or an irregular one. Typically, only the latter should be called Pseudoleukæmia ; the former he proposes to call "Febris Recurrens Chronica," and places it in the category of infectious diseases. Pel, in reply to Ebstein (*Berliner Klinischen Wochenschrift*, No. 35, 1887), shows that the cases he published in 1886, were entirely similar to Ebstein's. Pel does not think the disease entitled to a new name. He calls it an extremely infectious form of Pseudoleukæmia.

I think the above will go far to explain many of the anomalous features connected with the late Meerut outbreaks, and the only

explanation I can offer with reference to the conflicting nature of the reports concerning the outbreaks is that we have had to deal, most probably, with two or more diseases prevalent there at different times.

Gastric ulcers were frequently seen in the Burmah outbreak in transport mules; and it is a matter of fairly common belief that chlorotic women are especially liable to gastric ulcer, and to the worst accident of such a lesion—namely, perforation; and in this the Burmah disease was not peculiar. The ulcer itself, once formed, probably suffers from nutritional defect, owing to the impoverished state of the blood, which prevents the formation of resisting tissue around it. This lesion is not present in all outbreaks of Surra, however, as Dr. Evans also, who was the first to describe this disease in India, makes no mention of it in his report. It is possible, also, that a great many cases of gastric ulcer in the Burmah outbreak were complicated with Remittent Fever of equines (Burke), which is not at all an uncommon disease of tropical climates, and may be frequently seen not alone in Burmah, but in many parts of India also.

The possibility of confounding Surra with other diseases is manifest. And it is quite probable that the gastric ulcers which appear in many cases may be due to simple Remittent Fever common to hot climates, or it may be merely a result of Pseudo-chlorosis or Leukæmia above described. There can, we think, be little doubt that the term Surra is an elastic one, and that more than one essential disease has been included under it.

We are on the eve of grave changes in the nomenclature of disease in the lower animals, and those writers who are to follow us may have to speak of fevers which have not passed the stage of discussion to-day. The points of interest are so many, and the views concerning these so immature, that any one studying the literature of this subject may fairly ask if the last word on Surra has yet been spoken. But notwithstanding this element of doubt, I think that, taking all the facts together, the pathology must be accepted as Pernicious Anæmia, rather than Relapsing Fever of equines.

We need accuracy in diagnosis to help us to the best ways available of arranging the facts observed in practice, or, as a teacher lately expressed himself, "We require explanations of many of the facts which we observe."

I have now dealt as completely as space permits with the various points of analogy between Surra and Pernicious Anæmia of man and lower animals. The question remains, and a very practical one, the significance of the parasites noticed in this disease. There can be no doubt as to the interest that attaches

to the history of the parasitic forms found in the blood of Surra (Evans, 1879) and Pernicious Anæmia in man (Perroncito, 1880). These observers have noted the presence of a parasite in all the patients examined, and in animals subjected to experimental inoculations; but it has not been proved at least that this parasite is the cause of the disease. In the first place, there is no proof that the parasite which is contained in the blood used for inoculation has caused the disease; and secondly, the organism has never been isolated apart from the blood in Surra, and the disease then produced by inoculation of healthy animals; while, in a recent inquiry, it has been shown that these organisms are to be found in "no less than 25 per cent. of apparently healthy rats." And Dr. Crookshank states that the closest examination has confirmed his belief "that the parasites found in the blood of healthy rats are morphologically identical with the stained parasites of Surra." Dr. Evans had also noted the presence of parasites of different species in the blood of diseased as well as healthy camels (VETERINARY JOURNAL, 1881, p. 10).

Since all observations prove the existence of parasites of different species in the blood to be compatible with health, we have no reason for wonder when we find them greatly increased during disease.

In all kinds of animals, then, this parasite must exist, ready to assume its active form whenever the conditions of climate, of weakness, and of ill health present themselves afresh. Without doubt, the parasites which are the cause of this disease are widely prevalent, and exist in the blood of most animals, but attenuated; and in this state an animal may harbour them in its blood without showing much, if any, illness. They only become dangerous when, through over-crowding and other causes, in bodies enfeebled by disease, their virulence becomes exaggerated. The remarkable tendency of the blood to harbour parasites has been a matter of not recent observation. Their characteristic features manifest a disposition to augment in numbers under any shock or depression of the system. Sometimes prolonged exposure to malarious and ill-sanitary influence, debilitating effects from impaired nutrition, from Hyperpyrexia, etc., issues in a morbid alteration of the blood peculiarly fitted for the growth and multiplication of these organisms; but even when no change in the surroundings of the animal is discoverable, a deep impression is often stamped upon the system, leading to their increase.

These parasites are usually classed as filaria, and they do not seem to excite any disease when in moderate numbers. In other cases, Apoplexy may result from embolism of the heart and closure of the valves; and also the embryos appear to cause Apoplexy

by blocking up the capillaries of the brain. Besides this, they may cause epileptiform convulsions and Anæmia and wasting ; also hæmorrhages into the lungs and skin, and varied symptoms.

Under weakened states of the body, as in Surra, doubtless the parasites multiply rapidly, and even assume pathogenic properties. See a remarkable case of "*Filaria Immitis* in the Heart of a Dog, Causing Death," in the *VETERINARY JOURNAL*, 1881. We have here a case in which the parasites *became* pathogenic, and too much stress must not be laid on the pathogenic properties of the somewhat similar organisms found in the blood in Surra. There is strong evidence in favour of the belief that the parasites assume pathogenic properties under favourable conditions ; but it should also be stated that the parasites in Surra are only associated with the disease, the impoverished blood affording a suitable nidus for their development.

We naturally ask if there be any analogy in the behaviour of other parasites in this respect ? *Dracunculus* may cause little or no trouble in the earlier stages, but developing, changing place, and discharging its embryos, the gravest results follow ; *trichina* in its earlier stages is comparatively unfelt, but may become the cause of fatal disease. We know how severely animals suffer from the presence in the blood of other minute organisms. *Phthisis* in sheep, for example, is produced by *strongylus filaria* ; *Chlorosis* in man owes its origin to the *dochmius doudenalis* (Leukhart) ; whilst not only Anæmia, but Liver Disease and a form of Dysentery, are produced by the same parasite (Fayrer), which is not very unlike *filaria sanguinis hominis*. It seems impossible but that other diseases caused by parasites analogous to the *dochmius* should be common in India.

The *strongylus tetracanthus* gives rise to epizootic outbreaks of emaciation in horses in many districts of England (Gresswell, *Manual of Equine Medicine*, 1885) ; the *strongylus contortus* has been known to produce a form of Pernicious Anæmia in the horse (*poikilocytose*) observed in the Buenos Ayres (Wernicke, *Deuts. Zeits. f. Thierm u. vergl. Pathologie*, 13 Bd., 2 u. 3 Heft, 1887) ; the presence of the *anchylostomum doudenalis* and the *trichocephalus dispar* in the intestinal canal gives rise to Anæmia, or Beri-Beri in man (Kynsey, *Report on Anæmia, or Beri-Beri, of Ceylon*, 1887), and the same parasites have been found associated with Pernicious Anæmia in the lower animals, attended with Paralysis, and which has been described by Professor Fröhner (*Archiv. f. Wiss. Prakt. Thierheilkunde*, Bd. xii., 5 u. 6 Heft, 1886), and other veterinary surgeons ; the *filaria sanguinis equi* were found by Dr. Sonsino in the blood of the horse in Egypt ; and it is also seen that the dogs in China die suddenly from interference

with the heart's action, due to *filaria sanguinolenta*—whether to direct mechanical obstruction, or to altered conditions of the blood, it is difficult to say ; but that which occurs in the dog may, in a similar way, take place in the horse and other animals.

The Surra parasite of Evans' was described as a spirillum, but, examined under higher powers of the microscope, it was soon apparent that it was a more highly organised micro-parasite, presenting very peculiar and distinctive appearances, as Dr. Evans showed, and Dr. Crookshank has corroborated his observations.

Of the causes to which Surra is due, water-supply is probably the chief. This is the primary source, as water it is that harbours more than two-thirds of the parasites common in our animals. We may be certain that the fully-developed Surra parasite finds its way into the alimentary canal through the medium of water, and then gains entry into the circulating blood. How, and in what way, this latter mode of access takes place has not been suggested in the case of the Surra parasite, but I believe, with regard to its mode of entry into the animal's body, its *habitat* and the manner in which it becomes fecundated and finds its way into the blood-vessels, we may look with confidence for an early solution of what now seems obscure. I think the suggestion of M. Netter, already referred to, is a most reasonable one ; evidence is now accumulating to show that in it is to be found an explanation of much that has hitherto been uncertain with regard to the mode of entry peculiar to many helminths found in the blood.

Principal Veterinary Surgeon George Oliphant, in his letter dated Feb. 12, 1887, writes—"In one outbreak of Surra in the 18th Bengal Cavalry, in which 180 horses died, I made dozens of *post-mortem* examinations, and the appearances in all were identical—extreme pallidity of all the tissues, with perhaps a trifling serous effusion into the abdomen, etc. In fact, the animals looked as if they had been starved to death" ; and Zschokke also states "That none of the principal organs show any marked structural change." Besides Anæmia he has noted "Hæmorrhages under the serous membranes, swelling of the liver and spleen, loss of striæ in the muscular fibres of the heart, blood extravasations in the marrow of the bones, and a decrease in the number of red corpuscles in the blood"—the same as in Pernicious Anæmia in man.

Mr. Steel speaks of "Mucous congestions continuous throughout the anterior two-thirds of the bowel, with the presence of several species of worms," although he attaches no importance to these as a probable factor in the etiology of Surra. Dr. Evans had already alluded to the presence of petechiæ and yellow staining of the mucous lining of the small intestine ; so that this fact is significant in the history of Surra—the exact relations of mucous conges-

tion to Pernicious Anæmia in man having been already ascertained. It is impossible to say whether this congestion of the intestinal mucous membrane is essentially connected with the presence of the worms seen in Surra. It is a phenomenon of other specific fevers, and is generally ascribed to blood-vascular pluggings and minute extravasations of blood, but it *may* be due to direct irritant action of the worms, the same as in Beri-Beri or Pernicious Anæmia of human beings. The early symptoms of Hepatitis present in Surra, which is shown by Jaundice of the visible mucous membranes, may be due to congestion of the liver, caused by irritation of the worms in the biliary capillaries, leading to their rupture, and consequent deposits in the gland-substance, such as have been described by Dr. Evans in these cases. There is every reason to believe that when the liver has become so invaded, it is incapable not only of duly performing its own function of secreting bile, which is essential to proper digestion and health, but that it is an abiding pathological source of general Jaundice, which, if not removed, may result in the gravest evils—blood disorganisation, general Anæmia, Anasarca, etc. And in such cases the Hepatic complication appears so marked that it is sometimes difficult to say what share in the disease should be assigned to it, and what to the action of the parasites on the blood.

With respect to duration in Surra, it is almost diagnostic of Pernicious Anæmia, as Dr. Evans says, “that the average duration of the disease is probably not less than *two months*”—the same as in Pernicious Anæmia in man.

From a comparative point of view, it is interesting to observe how the above manifestations of Pernicious Anæmia correspond with those shown in man, in whom the fatality, duration, and course, and other features peculiar to this disease in animals, are represented by so closely allied characters. The marked Anæmia noted in Surra, the paroxysms of increase of temperature, the duration and course, and the extreme fatality, together with the history of the parasites seen in the blood, form a group of conditions sufficiently diagnostic of Pernicious Anæmia. The Leucocytosis, which is a marked feature of Pernicious Anæmia, is also characteristic of Surra, and which in typical cases is always present.

The views expressed as to the pathology of Surra have been throughout based upon, or brought into harmony with, the experiences of medical men regarding Pernicious Anæmia in man, and which is essentially the same disease in the lower animals, described by veterinary writers; it is, indeed, difficult for any one who will partially weigh all the points, to arrive at any other conclusion as to its pathology. A stumbling-block of former writers

was the pathology of Surra, a large mass of clinical evidence to hand notwithstanding. There can now be no reasonable doubt that there is a very clear analogy between Surra and Pernicious Anæmia of man and the lower animals, and that the disease in animals is as prevalent, perhaps, as it is (in many tropical and sub-tropical parts) in human beings.

Of the many drugs which have been suggested for this malady, none can be regarded as absolutely reliable, although arsenic and steel are believed to have some value. Thymol has been recommended as a specific for Anchylostomiasis or "Beri-Beri" of Ceylon, and it may be tried in cases of Surra seen in India. Chloride of ammonium should be given to relieve symptoms which are chiefly referable to congestion of the liver. *Atees* is much used in native practice, and there may be cases wherein it might be expedient to use it; but it can in no way take the place of arsenic, iron, or thymol. Dr. Macdonald speaks very highly of the value of calomel in these cases (*Brit. Med. Journ.*, Oct. 15th, 1887). The calomel is said to be necessary to remove the profuse mucous secretion in the intestines which protects the worms. Change of locality and climate is most favourable to recovery in these cases. The prevention consists in sound hygiene, care in avoidance of stagnant water, and protection from damp soils and extremes of climate.

Believing that the Meerut Canal is the feeding ground of the Surra parasites, as well as of other micro-organisms, I would urge that the ponies belonging to the 8th Hussars, which were until lately tied by the water's-edge, be removed to a safe distance, where they can have no access, accidental or intentional, to contaminated water-supply. The grain diet should be soaked in the purest water.

In a report on "Beri-Beri," by Surgeon A. A. Lyle (noticed in the *Lancet* of Oct. 15th, 1887, on pp. 778-9), the disease is believed to have been propagated through excreta; but there seems some reason to connect its appearance with an inadequate supply of food, and that of an unsatisfactory character.

The connection between Surra and Pernicious Anæmia being made evident, the still-existing controversy regarding Anthrax prevalent in Meerut at different periods, may be considered. Quite recently it was questioned whether Remittent Fever is ever found associated with Anthrax, because it is stated that the Surra parasite was discovered, in some cases witnessed, in Meerut, both before and twelve months after my investigations were made in that station; but I think a very little reflection will show that we have probably had two or more diseases to deal with in Meerut at one and the same time. And the temperature charts of

numerous cases kept by myself, as well as other veterinary surgeons, make it clear at least that we may have cases in the horse of what I consider well-marked Intermittent and Remittent Fever. The association of the Surra parasite proves nothing, since if the Surra parasite were witnessed in some cases, in others Anthrax bacilli were also present ; which I demonstrated to the other veterinary surgeons in Meerut at the time of my investigations, and provisionally termed the disease Remittent Anthrax.

I will quote, in support of my observations, Dr. Fleming, who is one of the leading authorities on animal diseases in Europe. He says :—"Veterinarians have long noticed that domestic animals living in malarious regions have the paludal cachexia, and that in them Intermittent Fever *often complicates or accompanies other maladies*, sometimes even occurring after operations or accidents. . . I may add that in 1861 I had several cases, among horses in North China, of what I considered, well-marked intermittent. . . . All the types of the disease have been witnessed : quotidian tertiary, etc. . . . Often there is gastric disturbance, and in the dog vomiting." (*Climate and Fevers of India*, Fayrer, 1882.)

In the writings of English veterinary authors, next to nothing has been said of the many simple fevers common in animals, the largest, the most engrossing, and, in some senses, the most important, certainly the most difficult, department of veterinary medicine, and their study has been practically ignored in the past ; but it is mere trifling to label any department as forbidden ground.

Those who wish to acquire a knowledge of the literature of Intermittent and Remittent Fever in the lower animals, may consult the excellent work of the veterinary professors (Friedberger and Fröhner, Vol. ii.), which has just been issued, and in which an exhaustive account of the fevers mentioned above is given.

I have elsewhere called attention to the fact that, not only Surra, but Anthrax and other specific diseases, may follow on an attack of simple Intermittent and Remittent Fever in animals, pointing out that, in the late Meerut outbreaks, Surra and Anthrax may have supervened, in different cases, on well-marked Intermittent and Remittent Fever ; yet that this did not explain the pathology of other cases in which the same type of fever was observed, according to the temperature charts, in whose blood neither Anthrax bacilli nor Surra parasites could be demonstrated. (*Supplement to Report on Remittent Anthrax*, 15th March, 1887.) There may be cases in which harmless organisms are frequently associated with disease. Considering the large number of troops which were assembled in Meerut last year, it would be rash to conclude that all, or even the greater number of the cases recorded

were those of Surra or Anthrax only. The greater number, if not all, of these cases recovered, whereas Surra has been described as an "invariably fatal" disorder in the lower animals.

It has been observed that in some of my cases in which the Anthrax bacilli were demonstrated, the disease did not run a rapid course as seen in other outbreaks of that disease. The theory I would suggest to account for this is, that the bacilli exist in many gradations of intensity. Anthrax has been seen to manifest itself in every gradation of severity, from slight fever and dullness to the most severe types met with in India. Veterinary surgeons on the continent of Europe have long been familiar with different types of Anthrax seen among animals, but especially *Anthrax acutissimus*, *acutus*, and *subacutus*, also *Anthrax remittens*. It is further ascertained, as a matter of observation, that certain micro-organisms cannot thrive well, or do so very imperfectly, in one body under certain conditions, whereas they may be pernicious when certain other conditions are present. It is known that, not only in an animal's body, but cultivated in artificial media, bacteria may retain their properties unaltered, or they may undergo more or less modification.

(To be continued.)

A NOTE ON THE "HORSE SICKNESS" OF SOUTH AFRICA.

BY J. CAMMACK, M.R.C.V.S., KIMBERLEY, SOUTH AFRICA.

MR. RUTHERFORD states, in his paper read before the Norfolk Veterinary Medical Association (and he has stated it elsewhere in copious letters to the daily press of South Africa), that South African Horse Sickness is Anthrax. If this be so, why do we not meet with it in ruminants grazing where ninety-five per cent. of all equines die from Horse Sickness? And over large areas this is so.

Why does Horse Sickness cease in cool weather, if it be Anthrax?

Why do infected lands, when herbage is scanty, become safe for horses after drying by the morning sun, as every farmer in South Africa knows is the case, though he knows equally well that the spores and bacilli of Splenic Fever are not thus dissipated from the same fields?

Why are the cold districts of "Cape Peninsula" free from Horse Sickness for twenty years at a time, though over large areas of it parts of farms are the scene of Anthrax in every month of every year?

Why, in the thin-soiled parts of Griqualand West, where rain is absent for nine to ten months every year, do we meet Horse

Sickness in March and April only (the autumn), and Anthrax every month of the year, if these be identical diseases?

It is not enough for practical (is it for other?) veterinarians to accept the microscopist's demonstration of *Bacillus anthracis* as a cause of disease. Cannot we manage to avoid optical tools and methods that render us unable to distinguish different pathogenic bacilli? Mr. Rutherford assures himself he has seen this bacillus in Horse Sickness, yet Horse Sickness is not Anthrax, nor is it very plain why accurate people should nominate it "anthracoid"—a term scientific pathologists ought to discard. We are told of a bilious form of Anthrax, in which fifty per cent. of horses recover in South Africa. May I assert that this bilious affection is not found in certain large districts of South Africa where Horse Sickness, Anthrax, and at least three other blood poisons (some peculiar to the equinæ), which I have no permission to describe (clinically or otherwise) in your pages, frequently occur? How is it Mr. Rutherford has not told us something of inoculation experiments with these interesting forms of what he says is Anthrax?

Two years ago it was pointed out and *proved* by the veterinary surgeon to the Cape Government, that Horse Sickness is not Anthrax.

CONTRACTION OF THE LIMBS.

BY KAY LEES, F.R.C.V.S., A.V.D., NEWBRIDGE, IRELAND.

THIS designation has been given to the permanent contraction or retraction of certain muscles—and, we might add, tendons and ligaments—which, in becoming hard and rigid, are at the same time reduced in length and thickness, so as to form inextensible cords which fix the parts they are attached to, and prevent their assuming their natural position (Fleming).

In March last I had (with Mr. S. M. Smith, A.V.D.) the opportunity of seeing a very interesting case of congenital contraction of both fore limbs in a thoroughbred foal. It was the day after birth. I found the creature with its dam in a comfortable loose-box. It looked bright and healthy, but was lying upon its side, being quite unable to stand, and had to be raised and held while sucking. The dam showed great affection for it, and was in a considerable state of excitement for the first few days, being off her feed, and suffering from simple diarrhœa. The foal on being raised was found quite unable to support itself on its fore legs, though it made every attempt to do so, but it was able to stand on the hind legs. The left fore limb was found bent to an acute angle at the knee, while the fetlock and pastern were in their natural position. The toe of the foot could at intervals be placed

upon the ground. The right fore leg was also bent at the knee to nearly the same degree as the other, and it was with difficulty that the toe of the foot could be placed upon the ground. On examining the left fore leg, the flexor metacarpi externus and medius muscles, together with their tendinous portions, were found in a retracted and rigid condition; the muscular portions were firm, unyielding, shortened, and dense—in fact, in a tonic condition, while the tendinous portions were hard and cord-like, feeling more like dried than living tissues. The right fore leg presented a similar condition, the flexor metacarpi externus and medius, flexor pedis perforans and perforatus muscles being affected in the same way, but perhaps not quite to such a great extent, as the muscular and tendinous portions were scarcely so dense and rigid. The methods adopted for the restoration of the parts were hot fomentations, with gentle hand rubbing, succeeded by the application of hot, dry flannel. This relieved the tonicity of the muscles, so as to enable the limbs to become more extended, and in a few days leather splints were applied behind the knees and fetlocks, well padded with tow, and the limbs from the fetlocks to the middle of the radius, covered with starch bandages. In a few days the limbs could gradually be more extended, but the splints and starch bandages were re-applied. I understand that the foal progressed favourably for some time, when she changed hands and I have entirely lost sight of her.

How these contractions are caused seems a matter of doubt. It appears that parturition was somewhat protracted, and the foal was in the maternal passage for some considerable time, with the head and part of the fore legs protruding, the latter being bent at the knee. Whether this, together with the influence of cold air and pressure from the contractions of the vulva, had any effect in producing such undue tonicity of the muscles and ligaments I cannot say, but it would seem most probable.

While serving in Northern India I had the opportunity of seeing a similar case: both fore legs were bent at the knee to an acute angle, rendering the foal incapable of assuming a standing position. The flexor metacarpi externus and medius muscles, together with their tendinous portions, of both fore legs, were in a retracted, tonic, and rigid condition, the tendinous portions being very prominent, and feeling like so many cords. The methods adopted in this case were tenotomy, after which the limbs could be fully extended. The application of splints, padding, and starch bandages was also resorted to. The foal in a few days was able to stand, and in the course of a fortnight was quite relieved. On removal of the splints, etc., the muscles affected were found in a normal state, and the foal afterwards made a rapid recovery.

Editorial.

IS TETANUS A CONTAGIOUS DISEASE ?

OF late years, the list of diseases which can be communicated from sick to healthy creatures has been rapidly lengthening, until now it begins to look somewhat formidable. A quarter of a century ago the transmissible diseases of animals were supposed to be comparatively few. They could almost be counted on the fingers of one hand ; now-a-days, it would almost appear as if the great majority of maladies could be conveyed, either by mediate or immediate contact, to susceptible animals, and the number is still being added to.

The last addition to the list is, if we may credit clinicians and experimental pathologists, as well as bacteriologists, that with which veterinary surgeons are tolerably well acquainted,—more so, perhaps, than medical men. We allude to Tetanus: one of the most painful and formidable disorders known, and one which is attended with such fearful mortality. Until quite recently no one would have regarded it as a transmissible disease, or even suspected it as being in any way allied to the zymotic class. Looking back over a long series of years of practice, during which we have had, we suppose, a fair share of cases of Tetanus, we cannot call to mind a single instance in which there was any reason to suspect transmission from the tetanised horse to other horses, or to its human attendants, as no evidence whatever of this kind presented itself. All the cases observed among horses were sporadic, and never more than one occurred in a place at the same time. We are aware that in the practice of some veterinary surgeons cases of the disease have been more frequent than in that of others, and also that it is somewhat common in certain localities ; but though these phenomenal manifestations were ascribed to many and diverse causes, yet it was generally admitted that they could not be satisfactorily accounted for, and we fancy infection was never dreamt of.

Though previously suspected to be so by others, Billroth in 1874 (*Allgem. Pathologie*) stated his belief that Tetanus was due to a specific intoxication of the blood. Subsequently, Arloing, Möller, Friedberger, and others, attempted to produce the malady by transfusing blood from a horse suffering from Tetanus to healthy horses, but with negative results. In 1882, Nocard inoculated the cerebro-spinal fluid of horses dead of Tetanus into sheep and goats, which remained unaffected. From these experiments it was inferred that it was not a septikæmic or infectious disorder. With the advent of more refined bacteriological methods, and exact and careful experimental investigations, on this, as on other diseases, much light has been thrown. Nicolaier, in 1884 (*Deutsche Med. Wochenschrift*) first detected a bacillus which he believed to be the cause of Tetanus, and which

he proved to be so by injecting it subcutaneously into rabbits, and producing the disease in them. Rosenbach arrived at the same results, though he was not successful in cultivating satisfactorily the *Bacillus tetani* (Langenbeck's *Archiv*, Band xxxiv.). It was inferred that this germ produced a chemical poison, which, acting upon the nervous system, developed the severe continuous muscular spasms; and Brieger (*Deutsche Med. Wochenschrift*, 1887), has found a substance in the body after death from Tetanus, which he supposes is so produced, and which he has named "Tetanin." Davide Giordano (*VETERINARY JOURNAL* for December, 1887), by a series of interesting experiments proved that the disease is due to a micro-organism, and is infectious and inoculable, being capable of transmission from man to animals, and from one animal to another; the bacillus producing the disease, either directly or after cultivation. The bacillus, he maintains, however, is localised at the wound, no results having followed inoculations with the blood or spinal cord of the man. In this he differs from Nicolaier and Rosenbach. Quite recently Dr. Shakespere, of Philadelphia (*British Medical Journal*, October, 1887), has corroborated the last-named investigators' statements, by a series of experiments upon rabbits with preparations of the spinal cords and brains of horses and mules dead from Tetanus. The matter was injected subcutaneously or beneath the dura mater, after being pulped in broth or glycerine, or cultivated in agar-agar. From his experiments he concludes that Tetanus is an infectious malady, that the virus is located in the nervous system, and may be rendered more active by its passage from rabbit to rabbit, and diminished in intensity by dessiccation, while its effects are more marked when inoculated intra-cranially than subcutaneously. Nocard has quite recently found that dried blood and pus scraped from instruments employed in castrating horses, all of which had died from Tetanus, caused that disease when inoculated into rabbits.

At the congress of French veterinary surgeons in 1886, a discussion took place upon this disease and its origin, and it was then mooted that mankind might derive it from the horse species. One of the chief supporters of this view is Verneuil (*De l'Origine Equine du Tetanos: Gazette Hebd. de Med. et de Chirurgie*, 1886), who even gives instances of such transmission on the authority of veterinary surgeons and others. And Dieckerhoff (*Lehrbuch der Speciellen Pathologie und Therapie für Thierärzte*) gives a very circumstantial instance, which seems to favour the possibility of such transmission.

The new notions to which we have alluded with regard to Tetanus require, and will now no doubt receive, further elucidation. The experience of veterinary surgeons will be brought to bear in this direction, and surely there can be no difficulty in arriving at the conclusion whether or not the disease is to be classed with those which may be communicated to healthy animals, and from these to our own species. As before mentioned, our own experience is opposed to such a conclusion; but it must be confessed that the experimental, bacteriological, and other evidence which has been rapidly accumulating in quite recent days, rather disposes us to waver in our opinion.

THE SCARLET FEVER GERM.

SEVERAL months ago we gave an account of the interesting processes by which Dr. Klein and Mr. W. H. Power, of the medical department of the Local Government Board, apparently established the relation between a disease found on the udders of some cows at Hendon and Scarlatina in man. The Cow Disease was not itself Scarlatina, but by cultivation of the organisms obtained from the cows the specific micrococcus of Scarlatina was supposed to be produced. Moreover, this cultivation was made in milk, and it was the milk of the affected cows that caused the Scarlatina epidemic which gave rise to the inquiry. Then it was proved that the virus of the Cow Disease, if conveyed into the human body by the medium of milk, developed there into the germ of Scarlatina, although between the Cow Disease itself and Scarlatina there is almost every possible difference. This discovery suggested to Dr. Klein a further question. He had shown, it was thought, that the Cow Disease could set up Scarlatina in the human subject he would now find out whether the Scarlatina germ was capable of producing the Cow Disease.

From a number of patients in the Fulham Fever Hospital, states the *St. James's Gazette* Dr. Klein took minute quantities of blood. These were placed in tiny tubes, and transferred to the surface of nutritive gelatine. In the result he obtained clear evidence that in some of his experiments the blood contained organisms. In other cases no positive results whatever were obtained. But in four cases out of nine the specific organism was detected; and the organism so recovered from the blood of Scarlatina patients was found to be exactly the same as had been cultivated from the virus taken from the teats of the Hendon cows. Dr. Klein does not hesitate to name this organism the *micrococcus scarlatinae*, as having a special character and a definite mode of existence. The next question was whether, itself capable of being cultivated from the Cow Disease, it was capable of being transformed back into the virus of that disease.

With a subculture of *micrococcus scarlatinae*, derived from Scarlet Fever in a human being, Dr. Klein inoculated two calves. The first was killed after ten days, and from blood taken from it a growth was derived identical with the *micrococcus scarlatinae*. The second calf was killed after twenty days, with the same results. In both animals an identical disease had been produced. Subsequently two calves were fed with milk mixed with the growth from several tubes of the same date and the same source as used for the other calves; and again the identical disease was produced: this disease bearing a great resemblance to that observed in the Hendon cows, except that there was no affection of the skin. But three out of four other calves—two of which were inoculated and two fed—were differently affected. Sore patches appeared, and the skin became scurfy; and on each nostril of one of them there was a patch of eruption which decided the matter. From these skin-eruptions were obtained "beautiful chains of cocci," coinciding with those developed from the virus of the cows. The circle was thus complete. A Cow Disease which is not Scarlatina, nor anything like Scarlatina, causes the animal to have sore teats. The exudations find their way into the milk-pail, and there develop into something which infects human beings with Scarlatina. From the Scarlet Fever patient a few drops of blood are taken; and after the disease germ has been cultivated, it is passed into the system of a calf, which forthwith becomes attacked by the identical disease observed in the original cow.

But this is not all. A case of suspected condensed milk was brought under Dr. Klein's notice. Scarlatina had broken out and could be traced to no other source. Sure enough the *micrococcus scarlatinae* was found in the

milk, and experiments with it on animals yielded exactly the same results as before. Again, last January a monkey died at Wimbledon of Scarlatina contracted by drinking the milk of cows among which there prevailed a disease similar to that at the Hendon farm. Microscopic examination of the internal organs of the monkey revealed the same changes as occur in these organs in human Scarlatina, and in the blood the Scarlatina micrococcus was found. By means of this micrococcus the Hendon disease was again induced in animals. Dr. Klein may therefore claim, says the *St. James's Gazette*, to have discovered a hitherto unsuspected cause of Scarlatina, in the form of a little-noticed and less understood Cow Disease quite distinct from the dreaded malady which—after certain developments of its germ—it produces in man.

RABIES AND HYDROPHOBIA.

SUMMARY OF EVIDENCE TAKEN BY THE SELECT COMMITTEE OF THE HOUSE OF LORDS, BY JAMES LAMBERT, F.R.C.V.S., INSPECTING VETERINARY SURGEON, ARMY VETERINARY DEPARTMENT.

(Continued from page 355, vol. xxv.)

IN order to make this paper as short as possible, repetition of evidence is omitted, except where important and contested points are involved. Any remarkable opinions are, however, given, to show what different ideas exist relating to the origin and course of disease.

Mr. Arthur Nicols, F.G.S., who gave evidence as "a naturalist and public lecturer on dogs," thinks that Rabies is not spontaneously developed. Was four years in the bush in Australia, where there is no Rabies among the dogs in a semi-wild state, although the climate is extremely warm. There the dogs were doing very hard work with cattle, frequently deprived of water for fifteen or twenty hours at a time, and sometimes compelled to drink from shallow pools, foul beyond description with the rotting carcasses of sheep. Rabies is utterly unknown in Australia.

Mr. Everett Millais, "an owner of dogs," is strongly in favour of the muzzle regulation applied all over the country to prevent the spread of Rabies, and is in favour of a period of quarantine for imported dogs.

Sir Charles Warren, G.C.M.G., Chief Commissioner of the Metropolitan Police: The regulations as regards muzzling dogs were first issued in November, 1885. Agrees with Mr. Sewell that the symptoms of Rabies are different from those of Epilepsy in the final stages, but thinks that the preliminary symptoms are exactly the same, and says that veterinary surgeons cannot always distinguish them. (Professional men will perceive that Sir Charles Warren is here under considerable misapprehension as regards the differentiation of Rabies and Epilepsy by veterinary surgeons. Nothing is easier to those who have seen the two diseases.) Sir Charles Warren continues, that out of 212 dogs killed by the police last year forty-eight were rabid. The Dogs Act states that dogs must be "under control" under certain circumstances; the magistrates, however, last year differed in their first definition, but eventually came to a decision that "under control" meant muzzling or leading. Believes that the spread of Rabies was stopped by muzzling. The rule with regard to the muzzle was, that it must not be cruel, that it must allow the dog to drink, and at the same time must not allow the dog to bite. The muzzle must be of wire, as the leather muzzles are useless. Most dogs do not object to the muzzle. Our rule was that the dog should be muzzled in such a manner as to admit of the animal breathing and drinking without obstruction. Thinks general muzzling for a sufficiently long time would stamp out Rabies. The proportion of rabid animals to the total number killed by the police is always about a quarter. Thinks there is a simi-

larity between Rabies and Epilepsy at the beginning, and that a veterinary surgeon cannot tell the distinction between the two at an early stage; he cannot say whether the dog is mad or epileptic at the beginning; all veterinary surgeons say the same as that. (Sir Charles Warren is here again under an entirely wrong impression, as veterinary surgeons hold the contrary opinion.) Thinks there is much more danger of Rabies in places where dogs lead such unhealthy lives as they do in town. Thinks that if the muzzle were enforced all over the country for three months, and then kept on in boroughs there would be no danger of its spreading. Is of opinion that dogs ought to be permanently muzzled in towns where children are. The supervision of dogs by the police makes them unpopular, and is not only troublesome but dangerous, as a great many men have been bitten by mad dogs, and some of the men have had their hands covered with bites. None of the constables have, however, died from Rabies. Seven were sent over to Paris to be treated by M. Pasteur. Would have a regulation that every dog should wear a collar with the owner's name and address on it. At one time, in 1886, in the metropolitan area, 200 policeman were employed at one time enforcing the Dogs Acts; that represents nearly £20,000 a year. Thinks it would be worth while to organise a special body of men, and put them under the employment of the Metropolitan Board of Works; their duties would be connected with dogs and not with human beings. Throwing this duty on the police makes them unpopular, and injures them in their ordinary duties. Thinks that leading a dog is not safety to strangers. Thinks that there are "epidemics" of Rabies. During last year, for instance, there was an epidemic, that is to say, dogs were liable to a kind of Epilepsy, and while they were liable to Epilepsy they were also liable to develop Rabies if they were bitten by a rabid dog, and "so far as I have seen Rabies and Epilepsy go together." When there is Rabies prevalent there is also a great deal of Epilepsy. Does not in the least believe in spontaneous Rabies; merely means that dogs are more subject to Rabies at some times than others. Would make it penal to let a dog be loose without a collar. Thinks there is as much or more Rabies among pampered dogs than there is among starving dogs. When a policeman is bitten carbolic acid is put into the wound. He on being bitten goes to the nearest chemist's shop and asks for some absolute phenol to be put into the wound. During the muzzling regulations many people left London to avoid them. Would put the Rabies regulations in force if he thought Rabies existed to such an extent as to be dangerous to the public. The streets are the playground of the children of the metropolis, and to allow unmuzzled dogs there seems quite beyond reason. Many children get so frightened by dogs that the effect of the fright lasts through their lives. What is a large dog to adults is only what a small dog is to children. Thinks that certain kinds of dogs, such as collies for instance, which are treacherous, should not be allowed in densely-populated parts at all—not even if muzzled, because they may slip their muzzles. In Turkey if there was a mad dog they would kill all the dogs round, and stamp it out, without thinking anything of it.

George Fleming, C.B., LL.D., Principal Veterinary Surgeon of the Army, says: In 1872, when he published "*Rabies and Hydrophobia*," the evidence had not become sufficiently clear that the disease might not arise spontaneously, but now believes that it never arises spontaneously. Was a member of the Royal Commission to inquire into M. Pasteur's system. The committee was unanimous in its opinion. The best remedy for Rabies is to stamp out the malady. Advocates universal muzzling for a certain period, which might be done without any cruelty. Would only enforce the muzzle when dogs are out, and not when on the owner's premises. A dog in the streets without a muzzle should be taken as a suspected dog. Muzzles are not so much a preventive against biting as an indication that the dog has an owner.

Every dog should wear a distinctive badge attached to his collar. It would be absolutely necessary to license every dog. Thinks six months old early enough to tax a dog. Would put the longest period of incubation of Rabies at twelve months. Although he would not tax young dogs, yet the bite of a rabid puppy would be dangerous, as dangerous as that of an old dog. M. Pasteur's system should be adopted within ten days after the bite. Does not think it is reliable if more than ten days have elapsed. The susceptibility of animals to take Rabies does not appear to be influenced by climatic conditions or age, but animals in a weakly state of health seem more disposed to take it. Entirely disbelieves in all the so-called cures for Rabies; every attempt at treatment has failed. There is undoubtedly sometimes a kind of mental hydrophobia in man; persons' minds are affected by thinking of the malady, especially if they have seen a person suffering from Hydrophobia, but does not know of an authentic case where mental hydrophobia has been fatal. Dumb madness and furious madness are the same disease, and the same virus will produce both forms. A *post-mortem* examination will not tell with certainty whether a dog was mad or not, but certain conditions of the stomach, which are not at all constant, might lead one to suspect Rabies, such as the presence of foreign bodies in, and congestion of, the stomach. But by inoculation with the virus we might ascertain with certainty whether the dog was rabid; this, however, is much restricted by the vivisection regulations under which so few places are licensed for experiments. If intracranial inoculation of Rabies is employed, the period of incubation is limited to between six and twelve days. If a dog is suspected of Rabies he ought to be kept alive, because if he has it his death will soon settle the question. There are cases on record, though very few, of recoveries of dogs from Rabies. There is no well-authenticated case of the recovery of a human being from Hydrophobia; cases have been reported, but they are very doubtful. M. Pasteur does not profess to *cure* Hydrophobia when once the symptoms have developed; he only prevents the virus from acting by attacking it before it has had time to cause the disease. M. Bourrel, a French veterinarian, proposed filing off the points of the fangs of all except sporting and watch dogs, to prevent their biting. Dr. Fleming does not think pampering has anything to do with the production of the disease; the rabid dogs are usually the starved dogs of the streets, as they are more exposed to bites. Would not apply muzzling to sporting dogs, because they are usually well looked after, and, for the same reason, would exempt *bonâ-fide* shepherds' dogs. Cats and foxes get Rabies from dogs. Believes wolves in Russia get Rabies from rabid dogs. Does not think hounds tearing up a rabid fox would get the disease, as it is not communicated through the digestive organs. If a dog had a wound on his head he might get it, but it is a remote possibility. The bite of a rabid cat is as serious as that of a rabid dog. Believes Rabies is chiefly propagated by wandering dogs. Although in some years Rabies has assumed an epizootic form, does not think the season of the year has anything to do with it. Is entirely in favour of stamping out Rabies. Does not know any animal disease that could be more readily stamped out. It is a disease which owes its spread solely to inoculation, and, therefore, if you prevent dogs biting for a certain time, you must get rid of the malady. In effecting this object, inconvenience to any persons should not cause Government to hesitate. In "Rabies and Hydrophobia," published by Dr. Fleming in 1872, it was stated that there was every reason to believe that Rabies or Hydrophobia might arise without contagion. Dr. Fleming is, from information obtained since that book was published, now quite convinced that the disease never arises spontaneously. The most convincing fact of all is, perhaps, that in the Isle of Réunion Hydrophobia and Rabies have never been witnessed within the memory of man, whereas, in

the neighbouring Isle of Mauritius, Rabies prevails to an alarming extent. In the Island of Réunion no dogs are allowed to be imported; but in the Island of Mauritius dogs are imported and are allowed to run about without any care at all, and the malady prevails there sometimes to a most terrible degree. Australia is exempt from Rabies and Hydrophobia; also the Shetland Islands, the Orkney Islands, and other parts of the world where dogs are kept in exactly the same way as they are in countries where Rabies is known. Suggested in "Rabies and Hydrophobia" that the earliest symptoms of the disease should be printed on the back of the licence paper, and that system was soon after adopted in Paris, on the recommendation of Professor Bouley. As to the difference between Distemper and Rabies, there is in both diseases, at first, dulness and a desire to get into a corner, or out of the way; but then the advice of a veterinary surgeon should be sought. At no stage are Epilepsy and Rabies like each other; Epilepsy attacks the dog at once and he falls into a fit; but in Rabies the symptoms are continuous, and there are no convulsive attacks as in Epilepsy. The appearance of a dog when in an epileptic fit bears not the faintest resemblance to the symptoms of Rabies. Epilepsy in the dog is the same disease as Epilepsy in man. Outbreaks of Rabies nearly always start from towns as the centre, and extend into the country. It is so in Lancashire, Yorkshire, and Cheshire. Rabies exists pretty well all the year round in some of our large towns. Distemper does not arise spontaneously; it only arises from infection or contagion, and it is entirely a popular delusion that every dog must have Distemper, which is extremely infectious. The infection can be carried in people's clothing, in food, etc. If a person has been to a place where a dog is suffering from Distemper, and goes miles away to a kennel where there are young dogs, the risk is ten to one that he would infect them.

Mr. Benjamin Arthur Whitelegge, M.D., Medical Officer at Nottingham, said: Many cases of Rabies had recently occurred there, the greatest number being reached in December, 1886, when the muzzling order was not in force. On the 13th December the muzzling order was put in force, and there was a sudden diminution of Rabies. Whenever the muzzling order was enforced Rabies decreased, and *vice versa*. This experiment was tried three times with the same result. Nottingham is certainly one of the districts more affected by Rabies than others in England, but not so much so as Lancashire. One of the most important parts of preventive measures is taking up dogs not under control, and slaughtering them if not claimed within a certain number of days. Nine human patients were sent to M. Pasteur from the Nottingham district, of whom none have died. In the village of Rudington, Nottinghamshire, a rabid dog on the 18th March, 1886, bit three sheep, of which one was seized with Rabies on the 2nd April, and died. Later on in the day the same dog bit ten more sheep, and five died of Rabies; still later in the same day it bit another set of five sheep, and two of these died of Rabies; and next morning it bit twelve more sheep, two of which died of Rabies. So that altogether thirty sheep, including ewes and lambs, were bitten, of which three died from the shock of the injuries, and ten more from Rabies. In order to stamp out Rabies, universal muzzling and the destruction of stray dogs would be necessary. There are leather muzzles that are not cruel and yet effectual; these are made of stiff leather in the same shape as the wire ones. Does not believe Rabies arises spontaneously.

Mr. George R. Krehl, editor of the *Stockkeeper, Kennel, and Farrier's Chronicle*, says: Rabies in exhibitors' and breeders' kennels is very rare indeed, owing to the seclusion in which they are kept, and to their being well looked after. Dogs "out of sorts" are at once isolated. Is in favour of destroying stray dogs not owned in three days. Quarantine for imported

dogs would be little hardship, and is in favour of it. There are very few foreign breeds of dogs imported, because our own are superior. Now we have more poodles and dachshunds than are to be found in their own countries, and better dachshunds than they have in Germany. Thinks that the Viennese plan might be beneficially applied to England. That plan is a collar with the name and address of the owner on it, and a metal tally showing the dog is licensed. If a dog had not the tally on, the police would at once see the dog was not licensed. When the owner pays the tax he could have the license paper and metal tally handed to him. If means were devised for making everybody pay the dog-tax the amount received would be more than doubled.

Mr. John Atkinson, M.R.C.V.S., "a consulting veterinary surgeon," thinks from a fortnight to thirty-five days is the principal time of incubation of Rabies; the majority of cases break out in that time. When the dog shows symptoms of Rabies, he usually dies in from four to six days, believes there are one or two cases recorded of six days, but it is usually four or five days. The first symptoms of Rabies are: usually we find a peculiar dulness, the dog hides himself for the first day or two, and after that has a peculiar cast of the eye, a kind of brilliant appearance; then there is the rambling stage, in which dogs run some distance when they get out. If they can break from their owner they run for miles and then return. They have paralysis of the lower jaw in the advanced stage and there is the peculiar bark; a wiry form of saliva hangs from the mouth, and a rabid dog will at once furiously fly at a strange dog: this is one of the most marked symptoms. If you attempt to tie up the rabid dog he becomes most furious, and you therefore cannot really muzzle a rabid dog, and if you do get the muzzle on he will almost tear himself to pieces to get it off. *Post-mortem* examination does not diagnose Rabies, because dogs suffering from indigestion will eat strange things, such as sticks, stones, etc. Thinks a great number of veterinary surgeons mistake Epilepsy for Rabies in the country districts, where few cases of Rabies are seen. (Perhaps country veterinary surgeons will read this observation with some surprise.—J. L.) Witness continues: Rabies and Epilepsy do not resemble each other, yet a person who had not seen many cases might mistake them. Thinks Rabies is entirely contagious, and does not believe it occurs spontaneously. Does not believe that the muzzle has anything, or at least has more than very little, to do with the lessening of Rabies. Thinks the Vienna system of collar and badge good. Thinks Rabies would be stamped out without muzzling by stopping the importation of foreign dogs; and we might kill all mad dogs; and also those that have been bitten by a supposed mad dog we should keep isolated or kill.

Dr. William Whitmarsh, M.D., M.R.C.S., and M.R.C.P., said he has studied M. Pasteur's system, but does not know that anything whatever has been found out about the microbes. "Nothing has been proved at all by M. Pasteur, except that he does inoculate with this virus," and "I believe at the present time we are not in a position to state that inoculation has done good at all." Witness continued: Believes in the case of Rabies that the rabific matter or germ is latent in the dog's blood, and by keeping it from water, or by muzzling it, or by annoying it, or by irritating it, the rabific matter enters into a state of fermentation, and Rabies is produced. Considers that Rabies might be produced or developed by a muzzle which prevents the dog from drinking water, and from breathing freely through his mouth. Feels certain that the use of the muzzle has developed the rabific matter in the blood of the dog without his having contact with any other dog, and that it can be spontaneously developed. Hydrophobia seems to be a new disease in England. "In Vienna they hardly know what Hydrophobia is, and,

I believe, that is simply because they adopt the Registration Act, and allow the dogs plenty of water." Has been to America, and there during the hot season they never have Rabies; but it is in the winter-time when all the ponds, lakes, and fountains are frozen that they have Hydrophobia. That pretty clearly shows that it is the absence of water that tends to develop Hydrophobia. The witness was asked by the Earl of Coventry: "Do I understand you to say that you think muzzling useless as a preventive of Rabies?" Answered that it depends entirely upon the district where it is put into force, as to whether there are any mad dogs about; but taking the case of a district where there are no mad dogs I will guarantee to say, that if you put on the muzzle you will in a very short time have several cases of Rabies. The muzzle annoys the dog, irritates him, and heats his blood. Quite believes Rabies is spontaneous. Question: "Do you consider it an open question whether this particular disorder may arise spontaneously in some cases, as well as by contagion in others?" Answer: "I should *not* say it was perfectly spontaneous. I should say that the germ was in the blood, and it only needed the match to be put to the fire which was already laid for it." Question by the Earl of Kimberley: "What do you understand by a germ?" Witness: "An organic microbe organism, just the same as the anemone seafish; it is something and it is nothing; you can hardly define what it is; the lowest form of organic life; it is something in the blood which is almost indefinable, but which, if put under a microscope, is seen to be in a very minute form." Thinks that in Southern America, and in Mexico and Florida, and that part of the world, and in warm climates generally, where there is plenty of water, Rabies is very little known. "It evidently appears to be the case that it only occurs in places where dogs are deprived of water." There are three different causes of Rabies in dogs, first, being bitten by another mad dog; secondly, it is hereditary; and thirdly, it arises naturally. Small-pox comes naturally, and may come without any contact at all. Thinks that the muzzling in the metropolis has been the means of increasing Rabies.

Mr. C. Rotherham, described as "canine surgeon to Her Majesty, and Licentiate of the Royal College of Veterinary Surgeons," but who is, however, only a "Registered Practitioner," said: Has had twenty-five years' experience as a canine surgeon; thinks Rabies may be produced by inoculation, or may have a spontaneous origin: believes in Rabies being hereditary. Rabid dogs will do all they can to get a muzzle off. Every dog should be measured for its muzzle. Has had a dog mad from the bite of a rat. Thinks a muzzle is detrimental to a dog's health. Does not know of any muzzle that is humane. Would suggest that dog owners should be required by law to send for a veterinary surgeon whenever a dog is sick, under penalty for neglect. Thousands of dogs are now kept in cellars, and only come out once a week, or once a fortnight, which is particularly the case in the Black Country, in Sheffield, Birmingham, and Manchester, and in some parts of London; at Kensal Green, for instance, on Sunday mornings thousands of dogs are brought out for a walk that never see daylight otherwise. Has never known a dog live over the fifth day after the symptoms of Rabies were developed, and has known them die within two days of the appearance of the symptoms. In dogs there is a latent kind of Rabies, which is not produced by a bite or inoculation, and which is not developed unless some irritation occurs. Is aware that his opinion that Rabies, may be hereditary or spontaneous is opposed by Dr. Fleming and most of the authorities. Is of opinion that the period of incubation in Rabies is from eight days to six weeks; has never had a case go over the sixth week. Remembers nine dogs being bitten by one rabid dog. They were in cages, and a fortnight was the longest period of incubation. Was himself bitten by a dog supposed to be rabid, and Mr. Kent, a veterinary surgeon then in practice, was bitten by the same dog and

died. "I recovered and I attribute my recovery to the vapour bath applied six weeks after the bite." The Earl of Miltown asked the witness, "You never had any symptoms of Hydrophobia, had you?" Answer: "I took the form of Tetanus or Lockjaw."

Mr. John Henry Clarke, M.D., said that his reading convinced him that Hydrophobia is not incurable, and quoted some cases which he described as of undoubted authority. Asked: "Do you think Hydrophobia can be produced spontaneously in men as well as in dogs?" Answered: "I do not say I think so; I only say that the evidence is not sufficient to decide the question either way." Does not think there is evidence to prove that Rabies is not spontaneous. Has not treated a case of Hydrophobia in either human beings or dogs.

Colonel E. L. Pryse, who keeps a pack of foxhounds in Cardiganshire, said Rabies at one time broke out in his kennels, some bitches having been bitten by a passing dog; hounds were being lost every day from the disease, when an old neighbouring quack doctor was called in, and the hounds were drenched with his "concoctions," and there was no loss afterwards, and not only that, but one bitch, whose jaw had half dropped by dumb madness, got perfectly well, and hunted for years afterwards. In this outbreak the dumb and raging madness appeared to break out simultaneously, some of the hounds being affected by the dumb, and some by the raging form of the malady. In the canine form of the disease there is no fear of water, and the witness has seen rabid dogs run through a river: they go and plunge their heads in water up to the eyes, but they cannot swallow. This is an important point to remember, because people sometimes say of a dog suspected to be mad, "That dog cannot be mad, because it runs through the river." Has hunted for nearly seventy years everywhere in Cardiganshire, and has never heard or known of a rabid fox. The only authentic instance is that of a tame fox which bit one of the Dukes of Richmond, some years ago, who died from the bite. (Lord Doneraile died this year, 1887, of hydrophobia caused by the bite of a tame rabid fox). The great body of the decoction above alluded to as having cured the hounds, is the thing which any one may see in any old rotten bank; it is called by a Welsh name which is equivalent to "ground ear." It is a strong fungus with an intensely pungent smell. Other things were mixed with it. The hounds had an emetic three days running, and the third day were drenched with the decoction, a considerable quantity of cold bathing going on at the same time. The kennel-man administered the treatment, being protected by an old coat of chain armour, and three or four pairs of gloves. This occurred nearly fifty years ago. Witness has never known a case of spontaneous Rabies. Witness thinks that many veterinary inspectors do not know a mad dog from a sane one. The old quack doctor kept his remedy a secret until he died, and then Colonel Pryse (the witness) got it from his son and advertised it in *Land and Water* or in the *Field* a few years ago, but never got any application for it.

Mr. W. Hunting, F.R.C.V.S., said: Contagion is the only cause of Rabies. Has never seen a rabid dog live over five days from the first exhibition of any change in his manner or behaviour of a suspicious nature. A rabid dog has always a fancy to roam immediately, and always escapes when he can. His experience is, that it is twenty to one that it is the best-kept dogs that spread Rabies. One breed of dogs is not more liable to Rabies than another. Snapping is very often the first symptom of Rabies. Does not think that muzzling had so much effect itself in stopping Rabies in London as its calling the attention of people to the condition of their dogs. Agrees with the opinion that if muzzling were generally carried out all over the country, for a little longer time, however, than a year—the period given by some witnesses—Rabies would be stamped out.

Sir Algernon E. West, K.C.B., Chairman of the Inland Revenue Board, gave evidence as to the collection of the dog tax, and said, in conclusion, that to print a short account of the usual symptoms of Rabies on the back of the dog license would be quite simple and inexpensive.

The Chevalier F. Krapf de Liverhoff, Consul-General for Austria in London, said he would get information for the Committee concerning the dog regulations in Austria.

Colonel Cobbe, Crown Inspector for the Midland Districts, which comprises a third of England, gave evidence relating to police duties connected with dogs.

Professor J. Woodroffe Hill, F.R.C.V.S., thinks that Rabies sometimes arises spontaneously, and has found that in-and-in bred dogs are much more subject to Rabies than other dogs. Has had several instances of spontaneous Rabies. Is much astounded to find Dr. Fleming does not now believe that Rabies arises spontaneously. Thinks it would be perfectly absurd to try and stamp out Rabies by muzzling. Rabies occurs in ferrets. Has never known of a case of a rabid fox. Is quite sure that the chief outbreaks in this country have been amongst foxhounds; they have been the great centres of it, and further says that Rabies is more prevalent among foxhounds than among other breeds of dogs. Asked whether this opinion is not a guess on his part, the witness answered that he could not admit that. Does not believe that the deer in the late outbreak in Richmond Park were rabid; believes they suffered from Splenic Apoplexy, in which the nervous system is affected in much the same way as in Rabies; for instance, in splenic disease there is paralysis, delirium, and congested brain, and the condition of the spinal cord, with other morbid conditions, all exactly as you see them in Rabies. Does not believe that M. Pasteur can get protective lymph from the brain and spinal cord, and is not prepared to admit the Pasteur theory of inoculating. Would consider the maximum period of incubation of Rabies to be twelve months. Would be very sorry to make experiments on rabbits, as he is not a vivisectionist. Has made no experiments regarding M. Pasteur's system. Considers that in-and-in breeding predisposes the dog to take Rabies, and thinks that, taking packs altogether, hounds are more in-bred than other dogs. If Rabies is a spontaneous disease we can only stamp it out by exterminating the whole race, and muzzling cannot stop it; the muzzle would render the dog so irritable and dangerous, that the evil would be almost as great as the other one. Believes that a savage dog, like a savage cat, can give a very venomous wound, but does not admit that the bite of a dog in a bad temper, or very much annoyed or excited, is poisonous—at any rate to such an extent as to produce Hydrophobia. Thinks he has seen every muzzle that has been invented, but has failed to see a safe one in the form of a wire muzzle, and in his view there is no protection whatever from the muzzle. Heat has nothing to do with generating Rabies; if it had, we should have had it in Australia and South Australia long ago. The witness was asked by the Earl of Kimberley, "If Rabies is spontaneous now, can you account for its never having appeared in these countries?" Answer: "Because dogs are not in-bred there as they are in England, as I said in writing to the Australians some time ago upon the subject. That is a very great point."

Mr. Richard John Price, a breeder and owner of dogs, attends a great many dog shows, and judges and exhibits at them; is deputy-lieutenant for Merionethshire. His favourite dogs—pointers—are very liable to Rabies. In packs of foxhounds puppies and skirting hounds—*i.e.*, a hound that leaves the pack during hunting—are most likely to bring Rabies, the former from returning to the places where they have been "at walk," and where they may be bitten by other dogs. Collies are particularly liable to spread infection,

because the collie has a habit of roaming at night, leaving his home and going out to kill sheep. Two stray collies came into one of his coverts and killed nearly 250 young pheasants and forty-nine old hens. They came at night, wandering in search of food or prey. You never see a farmer's sheep killed by his neighbours' dogs; it is always by a marauding dog from a long distance. This occurs in Wales. Thinks that collie dogs frequently go out at night to kill sheep, but still a collie dog is as necessary to a farmer as a spade is. By collie "I mean sheep dogs." Does not think wire muzzles are good, because dogs can still bite, or at least scratch animals through them with their teeth. Thinks the only effectual muzzle is the old-fashioned thin leather strap one, but considers it cruel. Thinks that the wearing of the certified collar with metal badge would be more effectual than the muzzle in combating Rabies in wild and thinly-populated country districts; farmers would be more likely to use that than the muzzle. Thinks that Rabies arises sometimes spontaneously.

Mr. John Colam, Secretary of the Royal Society for the Prevention of Cruelty to Animals, and a member of the Committee of the Dogs' Home, said that, as regards the Dogs' Home, there is an agreement with the Commissioner of Police as to keeping stray dogs, their registration at the Home, restoration to owners, etc. Stray dogs captured by the police are sent there, and are kept for five days. The Act provides for three days, but in obedience to a request of the Queen, they are kept two days longer. The pens are all open to the inspection of the public. Dogs ordered to be destroyed at the Home are put into a lethal chamber, where, under the influence of carbonic oxide gas, they immediately pass into a sleep, and die without apprehension of death or pain. Any suspected dog brought to the Home is isolated, and examined once every day by a veterinary surgeon, and if rabid, destroyed with all other dogs that came with it. A veterinary surgeon examines all dogs daily. Inquiries show that a lasso is more used in Europe for catching stray dogs than anything else. Thinks that in London the muzzle may have contributed to the decrease, but it was the capture of stray dogs that mainly brought about the reduction. 25,000 stray dogs were sent to the Dogs' Home at Battersea in 1885, and in 1886 nearly 35,000, all from the metropolitan area. During the panic about Rabies, people paid more attention to their dogs, and on noticing peculiarities, consulted veterinary surgeons. Muzzles may assist in some way, perhaps, but they cannot exterminate Rabies. In Berlin, the muzzle goes hand in hand with registration and census, and the wearing of a collar and regulation tally. Thinks the muzzle not of much use as a preventive of Rabies, and quotes numerous continental veterinarians in support of his opinion. Although in 1885 and 1886 the police brought nearly 61,000 dogs to the Home, no man—and very many policemen were bitten—was attacked by Hydrophobia. From this, thinks that the danger of taking the disease is exaggerated. Pavitt, the head-keeper at the Home for twenty-five years, said that he had been bitten thousands of times without bad consequences, and he was cauterised only a few times. All the other keepers say that they have been bitten many times without any bad consequence, and not one has suffered from Hydrophobia. Witness, however, recommends taking adequate measures against the spread of the disease, and does not think that any possible inconvenience to dogs or dog-owners ought to stand in the way of applying any remedy which might be found to be effectual against the spread of Hydrophobia. Thinks that the tax on dogs in towns should be higher than that in the country, because a town is not the place for dogs—collies, for instance—and people should be discouraged from keeping their dogs in a crowded town.

Dr. T. Lauder Brunton, F.R.S., M.D., one of the members of the Pasteur Commission, does not believe that Rabies arises spontaneously, or that there

is any reason to suppose that it is hereditary. Does not believe that Rabies can be given except by inoculation, or, in other words, unless the poison is introduced into an animal's body by a scratch, bite, etc. Narrates a case in his own practice where a young lady became affected with Hydrophobia three weeks after being bitten by a rabid dog. Inoculated his finger in making a *post-mortem* examination of a case of Hydrophobia, but only discovered that he had done so next morning, and cauterised the part so severely by permanganate of potash and caustic potash as to lose the top of the finger. Had no bad symptom afterwards. Saw one case of a boy bitten in the face. He was within five minutes well cauterised with nitrate of silver by a surgeon, yet he died of Hydrophobia in six weeks afterwards. The proportion of cases of Hydrophobia to the total of bites upon the face is very large. We have a number of cases on record where the simple application of the saliva of the rabid dog has communicated the disease. The members of the Pasteur Commission were quite unanimous in their report. Witness went over to Paris feeling very incredulous about the utility of the Pasteur system, and came back convinced of its utility. Thinks that a spinal cord would keep good for purposes of experimentation for several weeks—perhaps months, if kept at a moderately low temperature in glycerine.

Mr. James Rowe, M.R.C.V.S., President of the Central Veterinary Medical Society of London, regards the collar and badge as in no way desirable, and considers the muzzle a very inefficient measure. Thinks that if a veterinary surgeon is called upon to examine a dog on the ground of its having been mad, a *post-mortem* examination should be obligatory. Does not think the muzzle would have the least effect in putting down Rabies. The best preventives would be the better enforcement of the dog license, and a system of seizing stray dogs, and is in favour of the registration of dogs.

Mr. William South, F.R.C.V.S., is of opinion that Rabies is a "contagious spontaneous disease, originating and indigenous to this climate." There may be hereditary predisposition, and it will arise from diseases of the stomach or anything of that description which will upset the nervous system. Believes that Hydrophobia may be communicated by a dog or other animal that has not itself been bitten; believes that the saliva of the dog is poisonous in many cases. Has known a dog go mad when taken away from a bitch. Then the inclement weather affects dogs; you will notice that Rabies is most prevalent in winter or bad weather, when the wind is in the east, and the weather is wet and cold. Rabies is indigenous to this soil, and whatever you do you will never get rid of it. Believes that chaining up a dog may cause Rabies by preying on its mind and producing a great amount of irritability. Thinks the muzzle useless, and that it is an aggravating cause of Rabies.

Dr. Bell Taylor, M.D., F.R.C.S.L. and E., does not think we know what Rabies is, and that the whole class of canine nervous diseases may be mistaken for Rabies. Thinks M. Pasteur's system a great delusion.

Mr. Thomas Michael Dolan, M.D., L.R.C.P.E., F.R.C.S., is author of a book on "The Nature and Treatment of Rabies or Hydrophobia." This work was written by Dr. Geo. Fleming, P.V.S., and himself, the former doing the part referring to animals, and witness that relating to mankind. Would impose a penalty on owners of dogs neglecting to pay attention to first symptoms of Rabies. Does not think Rabies arises spontaneously; it must come from inoculation of some sort. Believes universal muzzling would be effectual in stamping out Rabies. Brouardel estimates the annual mortality in man in France from Hydrophobia at thirty. Tardieu, the acknowledged first hygienist in France, at twenty-five. M. Bouley accepted the averages given by Brouardel and Tardieu, and took it as from twenty-five to thirty. A certain number of cases of undoubted Hydrophobia have recovered. Witness thinks that the evidence in favour of the Pasteur system is, so far, unsatisfactory and in-

sufficient. Witness approves of muzzling and registration to combat Rabies.

Surgeon-General Charles Alexander Gordon, M.D., C.B., Q.H.P., thinks that Rabies as a specific and distinct disease does not exist. Thinks that Hydrophobia in man may follow from the bite of a dog, as it does any other injury, from the scratch of a nail for instance. Question: "Do you think that if for instance, you broke your leg you might take Hydrophobia in consequence?" Answer: "Yes, bearing in mind the view I take that Hydrophobia is not a specific disease."

Mr. Charles Lennox Peel, C.B., Clerk of the Privy Council, gave evidence on the different ways of administering Acts relating to Rabies. He was the last witness called by the Committee.

Briefly stated, the Committee after hearing all the foregoing evidence came to the following conclusions, set forth in their Report:—

- 1.—Expresses a hope that M. Pasteur's system will prove to be a success.
- 2.—That though it cannot be absolutely demonstrated that Rabies does not arise spontaneously, yet it is practically proved that inoculation with its virus is the only ascertained means of imparting the disease. This is, of course, equivalent to saying that the Committee does not think it arises spontaneously.
- 3.—That climatic conditions have no effect in producing or increasing the malady, and that in the hottest and coldest regions it is absent, and it has been shown that no special treatment of dogs, however trying to them, can bring about this particular affection. For all practical purposes, therefore, it may be dealt with as transmitted by inoculation only.
- 5.—Says that percentage of cases of Hydrophobia in those persons bitten by really rabid dogs is by no means large. Though the effect of immediate cauterisation is doubted by some, yet it should be adopted as soon as possible, and the methods most recommended are the hot iron, and strong carbolic acid. Panic is to be deprecated, because so many bitten persons escape.
- 6.—Strongly recommends that every dog license should have "an endorsement of the early signs of Rabies upon it."
- 7.—Does not agree with the suggestion that dogs with the premonitory symptoms of Rabies should be handed over to the police, and by them to a veterinary surgeon, owing to the paucity of these officials in country districts, and the cost to the ratepayers.
- 8.—Thinks universal muzzling would be very difficult to enforce, although the evidence in favour of it is extremely strong. The Committee, however, is of opinion that the effect of muzzling dogs in London was very beneficial. Some people, however, do not consider that the muzzle was the effective instrument, but that the seizure, detention, and destruction of stray dogs, and the greater care of dog-owners under pressure, were of no little avail in bringing about the diminution of the disorder.
- 9.—In 1853, owing to numerous cases of Rabies, muzzling was enforced in Berlin with, in the succeeding years, varying success. In 1875 a law was passed, extending to the whole of Prussia, providing for the immediate slaughter of all suspected dogs; also all *animals* that had been bitten by rabid animals; and that all dogs in a district infected by Rabies should be confined, or, when abroad, both muzzled and led. To this law is attributed the extinction of Rabies in Berlin, no case having occurred there since 1883.
- 10.—More effective powers for the seizure and slaughter of stray dogs are desirable.
- 11.—The Privy Council should intervene where Local Authorities are apathetic, and in all cases where Rabies is present the use of the muzzle should be enforced.

12.—The Privy Council should be empowered to seize, and, if advisable, slaughter, unclaimed dogs, after three days' detention. A penalty is now enforced for concealment of cases of Rabies, and Local Authorities are bound at once to communicate to the Privy Council every instance of it brought to their knowledge. The law in these cases should be strictly enforced.

13.—The dog tax should be enforced and collected by the Local Authorities, and they should be charged with the duty of seizure, and, in case of necessity, of slaughter. The carrying of a metal badge attached to his collar would show whether a dog is licensed or not.

14.—The Committee does not recommend the registration of dogs, which could not be properly effected without a complete change of the law, as licenses are now granted to the owner for the number of dogs desired, and not for any particular dogs.

15.—Local Authorities should have power to order the use of badges in their districts. In dense populations—in towns—special regulations for dogs are required, quite irrespective of the danger of Rabies, to protect the inhabitants, and especially the children, whose playground is the streets. If very stringent measures were authorised and taken against all wandering dogs with no mark by which their owners could at once be found, they would probably lead to a general voluntary use of collars and badges.

16.—The Committee do not see how the police can be dispensed with in dealing with stray dogs.

17.—The Committee is satisfied that though cats and tame foxes may have occasionally done mischief, it sees no ground for believing that *wild ones* have ever in this country communicated Rabies to mankind, or the animals under his charge. If Rabies were stamped out, the Committee believes that there is little cause for apprehension of its reintroduction by other animals, carnivorous or herbivorous.

18.—Recommends that a suspected dog which has bitten any one should be isolated, and not at once killed, until it is decided by a person skilled in canine diseases what should be done with it. If the dog has already been killed, the spinal cord should be extracted by a veterinary surgeon, and sent, after employing preservative means, to the Brown Institute.

19.—Does not recommend the blunting of dogs' teeth, though it may be painlessly and usefully applied in certain cases.

Clauses 20, 21, 22, 23, 24, and 25 explain existing laws relating to dogs and other animals.

Clause 26.—That the Privy Council may some time be called upon by the public to exert its authority throughout the kingdom, but until this necessity arises, it seems prudent to leave to Local Authorities the initiation of necessary measures.

Clause 27 and last.—“The recommendations of your Committee may be recapitulated as follows: 1. That when Rabies is present the muzzle should be enforced. 2. That the power of the Privy Council should be extended to authorise the slaughter of stray dogs. 3. That the symptoms of Rabies should be endorsed on dog licenses. 4. That Local Authorities should have power to order that dogs should wear badges which may identify their owners. 5. That in populous places Local Authorities should place restrictions upon dogs generally, and especially deal stringently with apparently ownerless dogs in their districts. 6. That in the event of its being conclusively proved that M. Pasteur's system provides a preventive remedy, facilities should be afforded for its application in England.”

INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA.

PROTECTIVE inoculation for this troublesome disease has caused much discussion of late, and has given rise to such diversity of opinion, that we appear to be almost as far as ever from a decision as to its value, or as to the occasions when it should be practised. The following correspondence speaks for itself. The first letter is from the clerk to the Dundee Commissioners of Police, and the second from the veterinary inspector for that burgh :—

Dundee, 7th July, 1887.

Pleuro-pneumonia.

DEAR SIR,—Having regard to what passed at the recent meeting of the Sanitary Committee of the Police Commissioners, at which you were present, will you be so good as send me a report explaining (1) your proper plan of inoculation and its merits; (2) how you think the Local Authority could carry it out, with special reference to the disposal of the milk of the cows inoculated and otherwise; and (3) any other suggestions which may occur to you in regard to outbreaks of Pleuro-pneumonia.—Yours faithfully, T. THORNTON, *Clerk.*

Inspector Spreull, Yeaman Shore.

Yeaman Shore, Dundee, 12th July, 1887.

To the Honourable the Commissioners of Police for the Burgh of Dundee.

GENTLEMEN,—In compliance with the wish expressed at the meeting of the Sanitary Committee, on the evening of Tuesday last, 5th inst., and in conformity with the terms of a letter forwarded to me on your behalf by Mr. Thornton, I have much pleasure in submitting the following report for your consideration on the subject of contagious Pleuro-pneumonia in cattle.

In doing so I may say that I will confine my remarks strictly to the points raised in the letter received through your clerk, but should any member of the commission desire further explanation on the subject, I shall be only too glad to supply him with whatever information I am in possession of, either in elucidation of any point on which I am about to touch, or in the amplification of the whole subject.

I. "As to the proposed plan of inoculation and its merits."

In making preparation for the operation of inoculation, the first and most important consideration is to find a suitable diseased lung from which to select the virus; then the selection must be very carefully made, and, when it has been made, the lymph must be used within a limited time, while yet it is perfectly fresh and free from the development of putrifactive germs, which very speedily make their advent therein, in order to ensure the undoubted success of the operation.

The mode of performing the operation I need not describe in detail, as that is a matter of no consequence so far as the terms of this report are concerned. Suffice it to say that the tip of the tail is the part operated upon for a variety of very cogent reasons; but, first and principally, because this is the most convenient place; and, secondly, because, in the event of the inoculation taking too great an effect and threatening to extend to the vital structures above, all that is necessary in order to completely control and restrict its action is to resort to the simple but effective means of amputation of the part involved so soon as the inoculation has come to maturity, which usually occurs from a fortnight to three weeks, or occasionally as late as close upon a month, after the operation.

—As to the merits of the operation after it has been done, I consider myself quite within the mark when I state with the utmost confidence that it will save not less than 99 per cent. of all animals that are inoculated in a healthy state, and render them perfectly proof against the disease. Not only are they

rendered incapable of taking the disease themselves, but they are equally incapable of transmitting it to others with which they may be afterwards brought into contact, as has been again and again exemplified within my own personal experience and in this immediate neighbourhood.

The following statistical summary of facts may, however, serve to illustrate the merits of the system better than any mere verbal explanation that I could possibly give:—

Outbreak.	Number of Inoculations (without selection).	Killed Diseased (after the operation).	Remaining Healthy.
A	44	1	43
B	12	0	12
C	7	0	7
D	6	0	6
E	3	0	3
F	17	1	16
G	72	6	66
H	3	1	2
I	48	1	47
J	49	0	49
K	2	0	2
L	20	0	20
M	8	1	7
N	72	5	67
O	2	0	2
P	3	0	3
Q	12	0	12

Totals 380 inoculations. 16 killed diseased. 364 remaining healthy.

Figures like these, when resulting from the indiscriminate adoption of inoculation, speak for themselves, more especially when it is borne in mind that the loss after inoculation can be reduced, without serious difficulty, to not more than half the proportion by the careful elimination of all suspected cases before going on with the operation, and by performing it only on such as are believed to be thoroughly healthy animals; and when it is further remembered that in each and all of the above-mentioned outbreaks the disease disappeared as completely as if the *pole-axe* had been at work as soon as the inoculation had time to come to maturity and take effect on the system of the animal. In proof of what I have just stated, it is only necessary to mention that all the cases in which the disease made its appearance after inoculation had been practised did so within sixteen days of that date, thus most conclusively demonstrating that the disease must have existed in a latent form prior to the date of the operation. One only of all the above-mentioned cases was lost as a result of the inoculation itself, and as this was the solitary example of a healthy animal lost out of all the hundreds I have quoted, it is only fair to conclude that if perfectly healthy animals alone were to be operated upon, the loss as a result of the operation would not exceed the modest sum of from three to five per theusand. Still further, however, in order to satisfy those who may be inclined to doubt, notwithstanding what I have already said, I may mention that in outbreak (F) only three of the animals were at first inoculated in order to test its value, and the result was that the disease continued to pick off one here and one there amongst the uninoculated animals, while these three continued to take their food and give their milk as usual, just as if nothing remarkable had happened to them, and innocent of how death was thinning out the ranks of their companions all round. Finding ultimately that they would not die, and as it now became apparent

to the owner that if he was to save any of the others, it would be necessary to resort to similar means to protect them, the remaining fourteen animals were accordingly operated upon, but within a few days one of them succumbed, leaving, however, thirteen sound and healthy animals, besides the first three, which all stood out to the end, and were alive and well when I saw them last, just before the place was declared to be free from disease.

My experience in outbreaks (I) and (J) were, if possible, of even a more satisfactory character.

In (I), only one case failed to become protected out of a herd of forty-eight animals which were subjected to the operation. This stock, like the last-mentioned one (F), were not all put under the operation at the same time, but were inoculated in two lots, as one half of the cattle were kept in a separate part of the steading, and at a considerable distance from the byre in which the outbreak of the disease had occurred. One of the first lot operated upon succumbed soon after the operation, and the disease disappeared for some weeks. When, however, this state of matters had gone on to about the sixth week, the disease, as usual, without any extraneous aid, found out for itself that there were still a number of unprotected animals within reach of its baneful influence, and, without more ado, selected its victim. So soon however, as this occurred, the owner, being quite alive to the situation, caused all the remaining cattle to be inoculated without further delay, and from that day the disease completely disappeared.

In outbreak (J), as in the cases of (F) and (I), the stock were not all inoculated at once. The first lot operated upon here being a lot of fourteen milch cows, amongst which the disease had made its appearance. There was, however, a lot of eight fat ones left undone, which stood at the opposite end of a very long byre from the stall in which the diseased cow had been; and as they were partially separated by a wooden partition, had never been actually in contact with the others, and were meant to be killed off without delay, the owner thought them quite safe, and that it was unnecessary to touch them. After a few weeks had elapsed, the whole of the fourteen inoculated animals had quite got over their operation, and were sound and healthy; but as suitable arrangements for the slaughter of the eight fat ones could not be made so soon as expected, they still remained in their stalls, with the result that, as in the other instances quoted, the disease found that they were still unprotected, and five of them out of the eight were found to be diseased, and had to be slaughtered in consequence, while three of them only remained healthy, till they were all killed by arrangement with the owner about six weeks after the outbreak of the disease. The remaining cattle in the adjoining courts were now inoculated, as it was perfectly evident that the disease would soon have extended to them, the result being that the whole of them did well, and, including the fourteen cows which were at first operated upon, the whole forty-nine animals were in good health, and several of them ready for the butcher when the declaration of freedom from disease was made.

On the other hand, in the case of outbreak (G), where all the animals were inoculated as soon as the disease made its appearance, the whole six cases that had to be killed in consequence of disease, occurred within sixteen days after the operation; the same thing may be said in regard to outbreak (N), but here only about ten days elapsed before all the diseased animals had been weeded out, and no further cases occurred, except that one of this herd succumbed to the effects of the operation. The same remarks, in fact, apply about equally to all the other cases; it is therefore surely unnecessary for me to multiply instances, or to enter into further detail as to the merits of the operation of inoculation in this disease. Suffice it for me to say that, without exception, the cattle on each of the above-mentioned premises were

mixed with fresh stock on the expiration of the prescribed period of fifty-six days, and up to the present time not a single case of disease has resulted from doing so ; moreover, where the inoculated animals have been sold to the butcher and killed, there has not, so far as I have been able to learn, been a single instance in which there has been the *least suspicion* of the disease on making a *post-mortem* examination.

II. "How you think the Local Authority could carry it out?" Inoculation can only be carried out with the consent of the owner, as there is no power to enforce it; but as it is equally to the interest of the Local Authority and the owner to adopt it, and as there are no special provisions in the Contagious Diseases (Animals) Acts or Orders of Council to prevent it, it is rare that any objection will be made to the carrying out of the operation.

III. "With special reference to the disposal of the milk of the cows inoculated and otherwise." One of the first signs of disease or systematic disturbance of any kind that attracts the attention of the attendants on, or owners of milch cows, is the cessation of the lacteal supply, and in no case is this more marked than in the disease of which I am now speaking; yet, while that is so, it is nothing unusual for us to be told that the animal in question "gave her milk, ate her food, and was chewing her cud on the morning of the day on which she was observed to be taken ill," and on which also she was most likely killed by the butcher; while the *post-mortem* examination reveals to us a state of things which it is impossible to conceive could have come about in a period short of weeks, or even months of illness. Of course, during all this time the milk has been given it has also been mixed with the product of the neighbouring cows, and sold without the slightest suspicion being attached to it. Now, if the milk of such animals can be sold and used with impunity and prove itself perfectly innocuous, it must be infinitely safer to use that drawn from a cow which has been the subject of inoculation, as, if there be anything of a deleterious nature in the milk in either case, it must admittedly be much more likely to be present in the case of the animal which has contracted the disease in the ordinary way, where the amount of systemic disturbance is greatest, and where the development of the disease products is much more aggravated than in inoculated cases. Not only is the contagium of the disease present in such cases in considerably larger quantities, but it is located in much more vital structures, and in addition to retarding and interfering with the proper purification of the blood from its mere mechanical presence, it is also there in a much more subtle, ready-communicable and active form, ready to be and is freely given off in the breath from the substance of the lungs. While that is so in regard to the case of disease with which from time to time we have to deal, on the other hand the cases in which inoculation has produced the development of the disease, display none of the dangerous distinguishing characteristics of which I have just spoken, the action of the virus of the disease being strictly confined to the immediate surroundings of the point of its insertion, and though it regularly develops sufficient energy to produce such an effect upon the system of the animal as to render it incapable of contracting the disease itself thereafter—which is really all that is wanted from the operation—yet, either from the nature of the structure in which it has developed, or from the fact that it is not brought into contact with the atmosphere in the same way or to the same extent as it does when located in the lungs, or from some other unknown cause, it becomes emasculated and loses all its more virulent qualities, and can only be again propagated by such direct means as re-inoculation. As a plant will not grow and come to its characteristic maturity without a suitable soil and other favourable conditions, so in like manner the germs of this disease will not

develop their characteristic effects when a suitable medium for that development is not forthcoming, and as the suitability of the medium in the case of the human species does not exist, therefore no such disease as contagious Pleuro-pneumonia can develop itself therein. I do not, therefore, know that there need be the slightest hesitation to use, or allow the milk of inoculated animals to be used, as it is a well-known fact that Pleuro-pneumonia is essentially a disease of the ruminantia, and has hitherto proved itself quite incapable of development in any other section of the animal kingdom. It is equally well known that if you sow oats you cannot reap barley, and so in like manner the diseases of the zymotic or contagious class produce and reproduce solely and only their own special kind, whether they have been introduced by inoculation into the system of the animal or otherwise.

Supposing even that it were possible for this disease to develop itself in our systems, the connecting links necessary therefor are wanting. The virus or active contagium of this disease can only be found in a mature state in the substance of the diseased lungs or in the tissues of the part surrounding the point of inoculation, nothing more than the immature microbes, or even still more probably, only the emanations from their minute bodies, being present in the blood and the milk, or in any other part of the system of the animal; it therefore follows, as a natural corollary, that as we cannot grow grain from unripe seed, or if we do not give it suitable soil and other favourable conditions, so in like manner there is no danger of the development of this disease from using the milk of Pleuro-pneumonia inoculated cows, as neither of these essential conditions for its inception and growth are available.

If practical proof be of any value to our contention, then that also is not wanting in support of it, as notwithstanding that the milk of hundreds of inoculated animals in this and the surrounding district has been consumed—a great proportion of it by infants, who would be specially susceptible to any sinister influence it might contain—no such thing as a case of contagious Pleuro-pneumonia amongst them has ever yet been heard of. Laying the milk question aside, however, it is not a matter of very great importance, in the consideration of the causes, Inoculation *v.* Stamping-out, whether the milk should or should not be used; and if it please the Local Authority best so to order that there be a period fixed during which its use must be discontinued, in order that there may not even be the suspicion of any harm attachable to so important a food product of the people—more especially of the rising generation—then by all means let the milk be sacrificed without hesitation, and debased, if I may so term it, strictly to such uses and purposes as those for which alone nature provided the supply.

IV. As to “any other suggestions which may occur to you in regard to outbreaks or Pleuro-pneumonia.”

One such suggestion occurs to me on the subject under discussion, which is probably worth mentioning here, and is as follows: Till the veterinary profession has gained more experience, and has become more uniform in its belief in the efficiency of inoculation—till our authorities have instituted some satisfactory experimental inquiry into the matter, and have come to a favourable conclusion—and till the public at large are more enlightened on the subject, and have gained sufficient confidence that the very best thing is being done for its extirpation—it might be well to impose restrictions on all cattle which have been exposed to the infection of Pleuro-pneumonia, and have been inoculated therefore, for a period of not less than twelve months, or for life even, if that should prove more acceptable, and make it illegal to move them from the place in which they are kept, except for immediate slaughter. Were some such measure as this adopted, it would entirely disarm the opposition to inoculation, as it would no longer be possible for our

opponents to contend that there was a probability of the inoculated animals propagating and spreading the disease, as they would never come into contact with any others except those in the same byre, and under similar circumstances to themselves, and would never again be moved therefrom, except when about to be slaughtered.

It is also highly desirable that powers should be obtained for the authorities of this burgh similar to those contained in Orders of Council (447), Edinburgh (449), Glasgow, and (450) Leith, by which the Local Authorities of these cities can, when occasion demands, remove diseased, suspected, or even healthy animals from premises in which it may be either highly impracticable or absolutely impossible, for want of the necessary accommodation, to kill them, as provided for by the terms of the Acts and other Orders of Council. Without some such powers, it is quite impossible for your officials to administer and carry out efficiently the working provisions of these Acts. I trust, therefore, that powers of this kind will be got without further delay.—Humbly reported by your obedient servant,

ANDW. SPREULL, F.R.C.V.S.,
Veterinary Inspector for the Burgh of Dundee.

NOTES ON A PROFESSIONAL VISIT TO THE CONTINENT.

FROM VETERINARY SURGEON FIRST CLASS F. DUCK, A.V.D., AND VETERINARY SURGEON FIRST CLASS F. SMITH, A.V.D.

(*The following notes may be of interest to many readers of the VETERINARY JOURNAL.*)

SIR,—We have the honour to submit for your information a report on professional matters which came under our observation during a recent visit to France, Germany, and Belgium.

Infirmaries Stables—French Army.—We saw at the Ecole Militaire in Paris the pharmacy and forge. Many surgical instruments were shown us; one a spraying apparatus for wounds, worked by a pair of bellows; a good case of firing irons heated by petroleum; a hand pump worked by a wheel for douche or enemata; a large and complete case of surgical instruments, and a *post-mortem* case, which appeared unnecessarily bulky—these are supplied to each regiment by Government. There was also a new instrument; for expanding the heels. The supply of medicine appeared liberal. The case-book was something like our own, but there was a space of four lines left between each entry, and nothing more appears to be inserted for the treatment than can be got into the four lines under this head. The name of each horse is inserted in the register, and every animal has a book corresponding to a veterinary history sheet. Glancing down the column of treatment, drugs would appear to play an important part. We saw a tooth chisel of ingenious construction, calculated to save much labour with the tooth-rasp. In the shoeing forge we noticed that the bellows were iron cylinders; the shoes hand-made, eight nail holes, and all stamped around the toe. Their system of shoeing struck us as being old-fashioned; there was not that conservation of the foot to which we attach so much importance, nor do they appear to take much care in fitting the shoe to the foot. The old rose-headed nail was used. In passing through the sick lines, we noticed how blemished the paralysis cases had been left; firing was prevalent, lines close and deep. We observed several sore backs. In the cavalry barracks at St. Germain, we saw in the infirmary stable a horse fired by deep penetrating points all over the scapular region; the part was covered with flies. The slings used in the infirmary were fixed above to an iron cradle which ran on two parallel bars by means of

wheels; the arrangement appeared to be a very good one for moving the patient without disturbing him. The slings had by them an irrigation apparatus; there was a foot bath in this infirmary for lame cases. The method of frost shoeing adopted by the regiment was rose-headed nails; the store shoes were very indifferent; the forge had a double cylinder blast. In the artillery barracks at Vincennes we saw a case of Nocard's operation for punctured Navicular bursa, also an ingenious and simple contrivance to take the place of cradles, consisting of a bar of iron attached to the head collar by two arms, hollowed to admit the chest and kept in its place by a strap over the neck. There were one or two suspicious cases under observation in the infirmary, and in the next box to them was a mare (healthy) with foal at foot. In the yard was a suspicious case tied up to the wall; no extra precautions appear to be adopted with these cases. The veterinary surgeon thought highly of guinea-pig inoculations in doubtful cases of disease; his method consisted of injecting three or four syringes full of fluid (discharge mixed up with water) under the skin, an operation likely to be attended by fatal results in such a susceptible animal as a guinea-pig. The actual cautery appeared to be abused.

The frost nails used here had large square heads, and are inserted at toe and heels; the farriers carry a shoeing wallet. We were shown a multiple shoeing tool, said to be devised by the veterinary surgeon, contrived to bring as many tools as possible into a single instrument. Machine-made nails are used. The forge waggon was on springs, the blast a double iron cylinder; shoes and nails are carried on the limber; three sets of store shoes are carried, and the nails are inserted in a straw plait or leather roll.

In the German army we saw no veterinary surgeon or sick lines; we were given to understand that the infirmary stables were only used for suspicious cases. We were struck by the absence of firing and other blemishes so conspicuous in the French army.

The Belgians have excellent sick lines, an operating shed containing a trevis and forge being part of the place. We saw the men at work in the forge; they clench up the fore feet in a strange manner, the foot being placed on a block. The pharmacy is well provided.

In Paris we paid a visit to the Alfort Veterinary School. All the cases appeared surgical, and there seemed an unnecessary amount of blood about. In casting horses they use the old-fashioned hobble and a strap to keep the head back. They fire with a fine penetrating point, which they say is superior to line firing, going completely through the skin and taking a long time over it, they pass over the same place a dozen times or so. It is said the slower it is done the better the effect. Another instrument for the same kind of firing is a fine needle made red hot by a heater fixed in the apparatus, and which can be changed at pleasure. In the infirmary was a suspicious case; no special precautions appeared to be adopted to prevent contagion. The infirmary stables were hot, stuffy, all windows closed, and no attempt at ventilation.

The museum is very fine, rich in anatomical and physiological material, poor in pathological, nothing hygienic in the place. A new museum, library, dissecting rooms, and laboratory have just been added to the institution.

We had the pleasure of seeing M. Nocard, who described his operation for punctured Navicular bursa. The sole and frog are drawn, a semicircular piece cut out of the sensitive frog and perforans tendon, and the bone scraped with a sharp spoon. They say the cases recover in three months and are fit to work; it must however be a hind foot. The operation is not universally accepted.

We applied for permission to see the stables of the General Omnibus Company, Paris, and regret to say we were refused.

We paid a visit to Pasteur's laboratory and, through the courtesy of Dr. Roux, saw a large number of patients inoculated, and afterwards had an opportunity of seeing the method of preparing and keeping up the supply of virus.

In Brussels we visited the king's stables, and were shown by M. Hardy, P.V.S., a most interesting case of fracture of both inferior maxilla above the symphysis, just anterior to the molar teeth; the jaw was hanging down. By a very simple contrivance the bones were held in apposition so completely that in the space of a couple of months union had taken place and the horse cured. The remarkable feature in this case was the extreme age of the animal—twenty-eight years.

We also visited the Bruxelles Veterinary School and were shown round the establishment. The museum is very fine, a paucity of pathological, but rich in physiological, zoological, and obstetrical material; there is nothing hygienic. The horse clinic was smaller than at Alford, but the variety of patients much larger—canaries, parrots, dogs, cats, etc. The canine practice was very fine. The infirmary stables were fair, but the accommodation small. We saw firing done with a red-hot needle; it is highly recommended for sprains and chronic enlargement. The method of inoculating guinea-pigs in suspicious cases is very simple; the hair is clipped off, three or four scratches made at the back of the head, into which the nasal discharge is rubbed. They are perfectly satisfied with the reliability of this test, and spoke enthusiastically of it. The period of incubation is five days, when, if the case is Glanders, pus will be found under a thin crust covering the scratches; if no pus exists under the crust the case is not affected. Inoculating horses with the pus will produce Glanders. We saw two inoculated cases, one with Farcy and Orchitis, and the other with pus under the crust at seat of inoculation and also Orchitis. A guinea-pig was inoculated from a suspicious case; on the fifth day the part had completely healed, and the professor was certain that the horse was not affected. We were told that guinea-pigs rarely die from Glanders, excepting the case is very acute.

In the forge of the school we observed that bars of lead are given the students to practise shoe-turning with.

We were shown round the State vaccination establishment which exists in the school; the important work done here is carried on by veterinary surgeons. A translation is attached of the most important points observed in the preparation of the vaccine. We have obtained this information from a pamphlet issued by the authorities. We were impressed with the extreme cleanliness of everything appertaining to the establishment, and the evident care given to the preparation of the vaccine, ensuring absolute purity.

(1) "The vaccine is cultivated from calves of three or four months' old, weighing not less than 220 lbs., each calf being separately and carefully examined."

(2) "Immediately after the crop of vaccine has been taken, the calves are destroyed, and the carcasses carefully examined *post-mortem*. If there be any sign of disease in an animal, the vaccine obtained from that source is destroyed."

Full and clear particulars are given in "Notice sur l'Office Vaccinogène Central de l'Etat Belge, par le Professeur Alphonse Delgive, Directeur de l'Establishment," published by authority. Considering the enormous importance of obtaining absolutely pure vaccine lymph, would it not be a measure of sound economy for the Army Veterinary School to take charge of its production for the whole service, in order that the absolute purity and freedom from disease of each specimen should be guaranteed?

Considering the risks which are at present run, and the naturally popular apprehension which is excited when a lymph source is looked for, it has

occurred to us that the whole of this can be easily overcome at a small outlay by carrying out at the Army Veterinary School the work so successfully prosecuted in Belgium.

Concluding, we desire to call the attention of the profession to the continental system of hot needle firing for sprains and chronic enlargements, and to the guinea-pig inoculation as a test for Glanders and Farcy. On the latter point the Brussels veterinary professors are enthusiastic, and are perfectly satisfied with its certainty.

Aldershot, 30th *Sept.*, 1887.

AN INTERIM REPORT ON INVESTIGATIONS INTO THE NATURE AND PREVENTION OF THE SOUTH AFRICAN HORSE-SICKNESS.

BY J. A. NUNN, F.R.C.V.S., F.R.G.S., ARMY VETERINARY DEPARTMENT, NATAL.

Arrival in Natal.—I arrived in Natal on January 5th, 1887, and established a laboratory in a building hired in Pietermaritzburg for the purpose of my investigations. I am glad to be able to inform you that, with the exception of a few test tubes and one or two glass dishes, all the apparatus I brought out with me from Messrs. Baker and Co., High Holborn, arrived safely.

I brought out 100 agar-agar culture tubes that Dr. Klein and Mr. Lingard kindly had prepared for me in the laboratory of the Brown Institution, Wandsworth-road. These I brought out with me in my own cabin, which was on deck. During a gale in the Bay of Biscay the sea got in and wetted the box, but, notwithstanding, every one of the tubes arrived in good condition.

A few of them were wetted, but the water had only penetrated a very short way into the cotton-wool plug, and the agar-agar inside remained perfectly sound in the whole of them. This perhaps is worthy of notice, as I believe that most of the agar-agar culture tubes that were taken out by Dr. Klein to Calcutta for the Cholera Commission did not stand the voyage, the sterilising apparatus now used not being then invented.

First case of Horse-sickness.—The first case of Horse-sickness, "a sporadic one," occurred in Pietermaritzburg on January 11th, 1887; but as, unfortunately, I had not then got up any of my apparatus from Durban, I was unable to take advantage of it. In conjunction with Messrs. Rowe and Crawford, A.V.D., I made a *post-mortem* examination with such means as were at our disposal, and, from some of the *post-mortem* appearances, I was much inclined to think the case was one of Anthrax. This opinion for reasons that will be seen further on, I would beg particularly to draw your attention to.

Forms and Symptoms of Horse-sickness.—The symptoms of the four forms of South African Horse-sickness, viz., "Blue Tongue," "Dik Kop," "Bilious," and "Pulmonary," have been so well described by Inspecting Veterinary Surgeon J. Lambert and Veterinary Surgeon Rutherford, A.V.D., in their pamphlets on the subject, and are so well known, that it would be recapitulation for me to enter into them; suffice it for me to say that I quite concur with those gentlemen in their description of the symptoms, that I consider these only different phases of the one and the same disease, and that I have seen one form run into the other, and *vice versa*.

South African Horse-sickness has generally been considered to be Anthrax, which no doubt in many respects it greatly resembles. That this diagnosis was made I can readily understand, as without a very careful series of experiments it would not be easy to determine that it was not so. In fact,

as I have before stated, in the first *post-mortem* examination, when I had not a microscope, I fell into the error myself.

Outbreak of Horse-sickness in 1887.—The epizooty of Horse-sickness commenced in Pietermaritzburg on the 8th March and ended on 20th May, 1887. I give a detailed statement and an extract of the number of casualties in the various mounted corps in Natal in a separate table, marked "Appendix A."

Preparations of Materials for Investigation.—The liquid cultivating medium, *i.e.*, beef-peptone broth, I made in the Colony, as it was impossible to carry it out from England. The hot-air chamber and steam steriliser, necessary to prepare this with, I had made by an ironmonger in Pietermaritzburg, from drawings I gave him, and they worked satisfactorily.

I had at first considerable difficulty in sterilising cotton wool for plugs of culture tubes. As there is no gas in the Colony, I tried to do this over the fire of a field forge, in a closed oven with a double lining; but to get the necessary heat (150° Centigrade, 302° Fahr.) the fire had to be blown up so fiercely that the bottom burned out of the apparatus and the wool inside caught fire. Furthermore, it was impossible to keep the smoke out, and the wool was completely spoiled by particles of carbon. I then tried using a paraffin stove that I had for the incubator; but, being only a single wick one, it would not give sufficient heat unless it was turned up very high with a great flame, which made the oil in the reservoir hot. This caused a dangerous explosion, which nearly set the whole laboratory on fire. I then obtained a double wick lamp, which easily gave the required heat, *viz.*, 150° Centigrade, and which I found could be left to burn for hours together without the slightest danger; with it I was able to sterilise cotton wool, flasks, tubes, etc., perfectly. The disadvantage of not having a good supply of gas was a dreadful drawback to my investigation; in fact, in bacteriological research, where not only apparent but absolute cleanliness is essential, and where the purification of instruments and vessels has to be carried out by heat, a good gas supply is a necessity; for no matter how carefully oil or other lamps are worked, there is always a certain amount of smoke and dirt, and this, try as I might, I found impossible to avoid.

Where a certain temperature was required to be kept up for any length of time, I could not do it with any regularity with an oil lamp, as not only the variations of day and night, but the opening and shutting of doors and windows, and even the passage of clouds across the sun, caused the temperature of the incubator to vary 3° or 4° F. The only way by which a constant temperature can be kept up for a considerable time (*i.e.*, three or four days together) is by heating the incubator by a gas lamp supplied through the medium of a Page's regulator. I dwell at some length on this point, as you will recollect that I told you before I left England that I anticipated great difficulty from the want of gas, and I find that I have not been mistaken; also, that my experiences may be of use in preventing like mishaps taking place in the event of any further investigations of a like nature being undertaken in remote countries like Natal, where only makeshifts can be obtained.

Proving the Nature of Horse-sickness.—Working on the supposition that the disease I had to deal with was what it has always been described, *viz.*, Anthrax, the first step was to prove it beyond doubt, by finding the characteristic Anthrax bacillus in the blood and tissues of those dead of Horse-sickness, and then reproducing the disease by experimental inoculation.

Discovery of a Microscopic Organism.—In cover-glass preparations of a film of blood taken from the heart with the usual precautions, and prepared in the usual way, I found a microscopic organism (bacillus) that easily stained with Spiller's blue, Methyle blue, gentian violet, or any of the dyes commonly used to render bacteria visible. During life I could not find this bacillus in the

blood. In a number of cases I examined the blood taken from the facial or temporal vein at intervals from the beginning of the attack, and in no instance was I able to discover any until some little time after death, "about two hours," when there were numbers present. In the froth that, as you are aware, exudes from the nostrils after death in a white mass like cotton wool, in some instances—but not invariably—the bacillus was present.

Character of the Organisms.—The bacilli in the blood can be seen, in many specimens, joined together in long filaments, with joints in them at irregular intervals. The exact size of these bacilli I am unable to give, as I have not got a micrometer with me, but on my return to England I will have them measured. In the froth I could not find these filaments, only the segments. In sections of the lungs and liver, I found bacilli when stained by Gram's method, but not invariably so; this may be due to want of skill on my part, and perhaps some future observer may be more successful.

Attempts at Cultivation of the Organisms.—I was utterly unable to isolate this bacillus, although I made numerous cultivations, both in beef-peptone broth and solid medium, viz., agar-agar. A growth readily appeared on this latter in the incubator at 42°C. in from 48 to 96 hours; but as the heat was obtained from an oil flame, a constant temperature could not be maintained within 5°C. The growth spreads only on the surface of the agar-agar, not into its substance, and after being kept for about a week at the temperature of the room it assumes a curious pink or salmon colour, which spreads over the original growth, which at first is a straw colour, turning after about ten days into a light orange. This growth is shown in the water-colour drawing. The growth spread rapidly the first three or four days, and then stopped, the pink growth forming and spreading over the original one. The agar-agar was at first very slightly softened. Cover-glass specimens stained with Spiller's purple, methyle blue, gentian violet, or any of the dyes used to render micro-organisms visible, showed it to be composed of very minute micrococci, very much smaller than a red-blood corpuscle, the same result appearing through several generations. The liquid medium—beef peptone broth—became turbid in the incubator at 42°C. in about twenty-four hours, and in from thirty-six to forty-eight showed a well-defined cloudy growth. Cover-glass specimens differed from those obtained from the agar-agar, showing a small bacillus. Sections of the lung stained with Rauvier's Piero carmine, showed that there was acute Pneumonia, with consolidation of the pulmonary tissue.

Inoculations with the Organisms.—Still working on the supposition that I was dealing with Anthrax, I made a series of inoculations on rabbits and guinea-pigs, which, as you are aware, are extremely susceptible to that disease, and are the animals generally used for experimental purposes by workers in bacteriology. These inoculations I made in the usual manner with freshly drawn-out glass pipettes, and in all of them I first verified the disease by making glass-cover preparations of the blood of the horse or mule dead thereof and finding the organism; then, having made certain, inoculating a rabbit or guinea-pig. To avoid any chance of contamination by carrying the blood about, I had the animal to be experimented upon conveyed to the field or other place where the *post-mortem* examination was made, and performed the inoculation at once.

Negative Results of Inoculation.—With the exception of the mule, No. 2721, inoculated on March 25th, and the sheep on the 4th April, there was no result at all, none of the animals appearing a bit the worse. The mule and the sheep in which results were seen, I will particularly mention further on. A Table showing the animals experimented upon, with the results obtained, is shown in "Appendix B."

Some of the animals, as will be seen, were inoculated with the beef broth in

which I had endeavoured to grow the bacillus, and in which, as I have before remarked, very small bacilli were present; but as there was no result it was impossible to say if this was the bacillus present in the blood that had undergone metamorphosis by artificial cultivation, or if it was merely an extraneous organism that had obtained entrance to the culture medium, as in order to determine if an organism is pathogenic or not, according to the axiom of Koch, it is necessary to discover the organism in the body of a diseased subject, isolate it by cultivating it in an artificial culture medium for several generations, then introduce it into the healthy body of a like creature, reproduce the disease, and rediscover the organism. But this I altogether failed to do in a single case.

Experiments have been mentioned in the pamphlets of Messrs. Lambert and Rutherford, that were made on goats which were inoculated with horse-sickness blood. These I repeated on sheep, but failed to get any result. One of the experiments quoted I found had been performed on a goat at some little distance from where the *post-mortem* examination on the horse had been made. The blood was removed in an ordinary subcutaneous syringe, which had been used before, and which no special precautions had been taken to sterilize, and in it carried to the subject to be operated upon. Is it not possible that the result obtained was some form of blood-poisoning or septicæmia from contamination of the fluid injected either by the syringe or by exposure to the atmosphere in transit? An experiment is also quoted as performed by D. Hutcheon, Esq., Colonial Veterinary Surgeon of the Cape Colony. That gentleman informs me that he fell into an error, confounding "Anthrax" with Horse Sickness. The cases he saw were when he first arrived in the colony, and being informed by old experienced colonists that they were Horse-sickness, and finding that it was communicable, he naturally concluded that Horse-sickness and Anthrax were the one and same disease. Subsequent experiments and experience, he informs me, showed him the mistake he made, and in his opinion the two diseases are different. It has also been stated that Horse-sickness can be reproduced by inoculation with the fluid from the lungs of a horse which has been dead twenty-four hours. This experiment I tried, but without any result; and, indeed, if there had been it would have been valueless, as septic or putrefactive germs would undoubtedly have developed in a climate like this in an animal dead for twenty-four hours. I inoculated three mules of the Transport Department, Nos. 2655, 2188, and 2721, on the 23rd, 24th, and 25th of March, from cases of Horse-sickness, in which I had found the bacillus in the blood.

These inoculations were made with new Pravaz syringes previously sterilised. The mule, 2721, operated on on March 25th, died on April 4th at 5.30 p.m., after five and a half hours' illness from Horse-sickness. From this mule I inoculated two sheep and two rabbits. One sheep died about forty-eight hours afterwards from inflammation of the intestines, together with, I think, the results of confinement, as both these sheep were animals caught from the Veldt, and had never before been handled. The other sheep and the two rabbits showed no result, and are alive now. From the sheep that died on April 6th, I inoculated a rabbit and a guinea-pig; these showed no result. Now, allowing that the period of incubation of Anthrax (which is generally forty-eight hours: "Klein's Micro-organisms in Disease," page 147, and "Vaccination Charbonneux," by Chs. Cumberland, page 211), is, in South Africa, from climatic or other causes, ten days, then the mules, Nos. 2655 and 2188, inoculated on the 23rd and 24th of March, should have died on the 2nd and 3rd of April; whereas they never showed the slightest results, and are alive now.

Again, allowing that the inoculations had taken effect (which, if Anthrax,

they undoubtedly would have), but in such an obscure manner as to have escaped my notice, then this mule, No. 2721, should have been protectively inoculated, and should not have contracted the disease naturally. From this experiment I argue that the mule, No. 2721, that died, contracted Horse-sickness naturally, and that no contagium existed in the inoculations I made.

Non-contagiousness of Horse-sickness.—Numerous instances have come under my notice of animals being in contact with diseased ones, without any ill results. A gentleman in the Mooi River district, where Horse-sickness was very prevalent in 1866, had a mare with a young foal at foot; the mare died on the Veldt, and was not discovered for about thirty-six hours, when the foal was seen endeavouring to suck her, and had presumably been doing so for some time. Another gentleman told me that up at the gold-fields at Barberton, he was driving a pair of horses in a Cape cart, when one of them suddenly became ill and died in a short time. He sent back his Kaffir boy to get another horse, and as he was a long way from home, he took the other horse out of harness and knee-haltered him, turning him out; and then himself lay down under the shade of the cart, where he fell asleep. He woke up in the course of an hour or two, when he found that the live horse had been most of the time standing over his dead companion, smelling at him, and that some of the froth from the dead one's nostrils had adhered to those of the living one. Mr. Wiltshire, Colonial veterinary surgeon, Natal, had a horse in his stable which died during the night, and was not discovered till the following morning. During the whole of this period, the one next him had been in close proximity to the body. A contractor in Durban informed me that, some years ago, one of his horses was found to be very ill from the pulmonary form of Horse-sickness, and had blown a quantity of froth from his nostrils over the food in the manger. The animal was removed and died. He gave directions to one of his Kaffir boys to remove the food, sweep out the stall, and not put any other horse into it, but he found his orders were not obeyed; a horse was put into the stall, and ate the whole of the dead one's rations, over which the froth had been blown, yet he never suffered in the least, and is alive and well now.

During the epizooty, a number of carcasses of horses dying at Fort Napier were taken by a contractor who lived at the lower end of the town of Pietermaritzburg, to be boiled down, but the passage of them through the town did not make any difference in the cases amongst the civil population, which, I may remark, were comparatively few. The conclusions I draw at present from the above facts and experiments are that Horse-sickness is not contagious; which, from the results of experience, is the universal opinion of the Boers and farmers of South Africa, and cannot be reproduced by direct inoculation of the blood from a diseased to a healthy subject; neither is it infectious.

The Disease is not Anthrax.—This being so, it cannot be Anthrax, which was reproduced from the one-thousandth part of a drop of blood by Davaine, and which is well known to be a most virulently contagious disease.

The following facts in addition, go to point out that Horse-sickness and Anthrax are different diseases. In none of the *post-mortem* examinations I have made have I found the characteristic anthrax spleen, which is soft and broken down, resembling a bag full of fluid blood; it has always been of a normal consistency. In some cases it was somewhat enlarged, but to no great extent, and the edges of it rounded: but it was so little softened that I was easily able to preserve and harden it in spirit, which with an anthrax spleen I certainly could not have done.

Decomposition sets in rapidly in Anthrax. "Le cadavre ex décompose rapidement, du sang s'écoule par les cavités nasales et le ventre est ballonné

considérablement (*Vaccination Charbonneux de Pasteur*, page 13)." This was not my experience with Horse-sickness.

Non-transmissibility of Horse-sickness to Ruminants.—It is a well-known fact that ruminants are much more susceptible to Anthrax than solipeds. During the Horse-sickness season, on certain low-lying lands or Vlies round Pietermaritzburg, especially on the town lands and Zwaartkop Valley, no man would turn out a horse or mule at night and expect to find him alive in the morning. Yet at this time I have seen herds of hundreds of cattle grazing there day and night. In one spot just outside the town is a regular encamping ground, on which waggons encamp for the night, turning their oxen out to graze. I made particular inquiries if there was any disease amongst these animals, and could hear of none; in fact, some of the owners seemed rather surprised at my suspecting such a thing, and said that for years past this encamping ground had been used, and that during the sickly season they had avoided bringing mules and horses from the high country into Pietermaritzburg, but had no hesitation about oxen. On part of the road to the Barberton Gold Fields Horse-sickness was so bad that, for several stages, the mail-coach was drawn by oxen, which lived and did well.

Non-transmissibility of Horse-sickness to Mankind.—During the time troops have been in Natal, some hundreds of *post-mortem* examinations must have been made on horses that have died from Horse-sickness, by farriers and shoeing-smiths. These men, from the very nature of their work, must have had scratches and cuts on their arms and hands, yet in both the civil and military hospitals there is no record of any ill results to a human being from making such an examination in a case of Horse-sickness. This information has kindly been given me by Surgeon-Major Coates, A.M.S., who has seen much service in South Africa, and Dr. J. Allen, who has been many years in practice in Pietermaritzburg. On two different occasions I myself saw farriers who, in making *post-mortem* examinations, cut their hands. One man had done so before I saw him, and when he came under my notice he must have been at least ten minutes cutting up the carcass, with a deep open cut on one of his fingers, and his arms covered with blood from the dead horse. Another instance came under my notice of a wound having been inflicted by the broken end of a rib; but in none of these was there any ill result. While working in my laboratory, I inoculated myself accidentally in the hand with a glass pipette containing blood from a case of Horse-sickness. I did not notice the broken piece of glass for some little time—perhaps a minute. I cauterized the wound, but there was ample time for the blood to be absorbed, and if it had been Anthrax, I probably should not have been alive to write this report.

Differences between Horse-sickness and Anthrax.—Anthrax usually occurs in extremely hot weather, and rapidly runs through a flock or herd of animals, large numbers dying in the course of a few hours; whereas in the late epizooty at Fort Napier, the greatest number of deaths in one day was nine. *Vide* "Appendix C."

One attack of Anthrax generally gives immunity from a second, and on this fact the theory of protective inoculation is based. Animals that had recovered from an attack of Horse-sickness (salted, as they were termed), were looked upon as enjoying immunity, and commanded a better price in the market. Of late years this has been open to doubt; but it was difficult to prove, from the fact that horses were often represented as being "salted" when they were not so.

Liability to Several Attacks of Horse-sickness.—During the late epizooty, several cases came under my notice of animals that had recovered from Horse-sickness in former years, but which died this year. One of these had been in the owner's possession for ten years, and had recovered from two

attacks. There was a remarkable case of a horse which was attacked at the commencement of the sickly season and recovered, but died of a second attack later on.

Outbreak of Anthrax in Sheep.—An outbreak of disease took place in a flock of sheep belonging to a Mr. Boothes, near Grey Town, Umvoti County, Natal, in April, 1887. As a large number had died, and continued doing so in spite of the precautionary measures and treatment adopted by the owner, he consulted some of his neighbours, many of whom had been farming in the Colony all their lives, and these gentlemen agreeing that they had never seen anything like it before, Mr. Wiltshire, Colonial Veterinary Surgeon, was called in. By the kindness of this gentleman, I obtained some of the blood from these sheep, sealed up in vaccine tubes, and dried on cover-glass; as well as some of the organs, liver, etc. In the cover-glass preparations, I discovered the Anthrax bacillus. With the blood of the sheep I inoculated several rabbits and guinea-pigs which died in from thirty to sixty hours, and in their blood I found Anthrax bacilli. Mr. Wiltshire inoculated a rabbit at Grey Town with the blood of a sheep; this animal died. Mr. Boothes inoculated a rabbit at his farm with the blood of a sheep, and sent it to me at once alive to Pietermaritzburg. It died in forty-eight hours after inoculation, and in its blood I found the Anthrax bacillus. From this animal I inoculated several other rabbits and guinea-pigs, all of which showed typical Anthrax. I also found the Anthrax bacillus in the livers of the sheep. Under the microscope the two organisms appear different; that of Horse-sickness being larger and broader, the joints longer, and more irregular, and the ends rounder than those of Anthrax, the joints of which appear to be cut across in a straight line, forming a right angle to the sides; several Kaffirs—forty or fifty—on Mr. Boothes' farm became very ill, and six of them died. The men had been eating the diseased meat and handling the dead sheep. M. Pasteur made the experiment of feeding a number of sheep on soft food that had been watered with the bacillus and spores of Anthrax, but with little result. The same sheep, when fed on the same food watered with the bacillus and spores of Anthrax, but in which thorns and thistles were placed, and the membrane of the mouth lacerated thereby, died of Anthrax in considerable numbers; thus proving that, as long as the membrane of the alimentary canal is intact, Anthrax is difficult to produce, or, in other words, results are not obtained unless the organism gains direct access to the blood. I have seen the same results follow in mice kept in a cage, and which have eaten their companions that died from artificially-produced Anthrax. In a case in Essex (VETERINARY JOURNAL, 1887), a veterinary surgeon either died or became dangerously ill from Anthrax, having contracted it while making a *post-mortem* examination, by a drop of blood falling on a small abrasion of his arm made by his shirt. In both these instances—viz., at Grey Town, in Natal, and in Essex—persons contracted the disease either from the most trivial wounds, or else, in the case of the Kaffirs at Grey Town, by the most difficult manner in which Anthrax can be reproduced, which difficulty would be increased by the fact that the meat was to a certain extent exposed to heat; for, although not very particular as to their cooking, Kaffirs do not actually eat their meat raw.

Deductions from Facts and Experiments.—The deductions from the above facts and experiments are:—

1. That Horse-sickness cannot be reproduced by direct inoculation in rabbits, guinea-pigs, mules, or sheep. That the disease in the Grey Town sheep can be reproduced in rabbits and guinea-pigs.
2. That human beings do not suffer any ill results from handling carcasses of horses dead from Horse-sickness, though they may have cuts and wounds

on their hands; but those who were about the sheep at Grey Town did, they either dying or becoming dangerously ill.

3. That experienced farmers who had been all their lives in the Colony—men of good powers of observation, had never seen or heard of any disease like that amongst the Grey Town sheep; whereas they were well acquainted with Horse-sickness, and they all specially noticed the condition of the spleen, which in the sheep they said “the milt looked like a bladder full of blood, and the carcase soon became rotten.”

4. That there is a considerable difference in the appearance, under the microscope of the micro-organisms obtained from cases of Horse-sickness and from the Grey Town sheep—so much so, that it was noticed by unskilled persons, officers and others.

5. That the disease in the Grey Town sheep was Anthrax, and that Horse-sickness is not, and that Anthrax is, very rare in the Colony.

Horse-sickness a Malarial.—I am much inclined to the opinion, from the result of the experiments made this sickly season, that Horse-sickness is of malarial nature. It is an admitted fact that, as a rule, it is not so prevalent on high as on low ground. I say as a rule, because, although on the Highlands of South Africa the disease is most uncommon, last year—1886—it was very severe in the upper parts of Natal, viz., the Mooi River, and on the Drakensburg and Biggersburg Mountains, the former of which are some 8,000 feet high. At first sight, this may seem to at once veto the malarial theory, but it must be borne in mind that Yellow Fever has been very severe in the Blue Mountains of Jamaica, and Cholera is not unknown at considerable altitudes in the Himalayas. It is also an admitted fact that horses in stables are not so prone to the disease as those in the open, and racehorses are asserted never to get it, the fact of their being in hard condition being usually said to be the reason. I think this can be accounted for, from the fact that if a man has a racehorse he keeps him in a stable worthy of the name, and, furthermore, he does not take him out after sundown. This, I think, is a most important point to be observed; for I have noticed that nearly all the cases are attacked either shortly after sundown or in the very early morning—few or any in the daytime. The owner of a racehorse will be careful about closing the doors and windows, not exposing the animal to a draught: as a rule, too much care is taken by the ordinary groom on this point. It is, however, common to hear of horses dying in stables; but if one comes to look at the generality of the stables in Natal, they are not worthy of the name, being only sheds of corrugated iron that keep the rain off. The season of the year—end of the summer and autumn—and atmospheric conditions, furnish another strong argument in my mind in favour of malaria being the cause of Horse-sickness. That period of the year in Natal is the rainy season, all the low-lying lands being swamps. It is also the time of year when there are greater atmospheric changes than at any other—i.e., thunderstorms, rain-showers, etc., with a great range of both barometer and thermometer. The town of Pietermaritzburg is situated in lat. 29.3 S. and in long. 30.2 E., in a basin about 1,500 feet above the sea, entirely surrounded by high hills, with the river Umsindusi running through it. Fort Napier is on a low ridge, or spur, about 2,220 feet above the sea level, in the middle of this valley, and is surrounded on three sides by low swampy ground, known in South Africa as Vlies. These are shown in the plan. The artillery and part of the cavalry lines were on the south-west side of the ridge overlooking the town valley, the mounted infantry and remainder of the cavalry on the north-east side looking over the Zwaartkop Valley, and lower down in the valley itself is the Transport Yard shown in the plan. The mounted infantry and artillery mules (the battery being a screw-gun mountain one) were picketed out in the open, the cavalry in iron sheds

(I cannot call them stables) open on one side; the transport animals also in sheds open on one side, made out of some old buildings. I noticed that when a mist rose from these valleys, those were the days most animals were attacked. When the wind blew across the Zwaartkop Valley from the north, the transport and mounted infantry suffered; when from the east, the cavalry and artillery. This, be it understood, was not the prevailing wind, but rather eddies caused by the surrounding hills. Apparently the ridge of the hill on which Fort Napier is situated broke the force of the wind, deflecting it upwards, and presumably the miasma with it. I also noticed that the sides of the hill towards which the wind was blowing were covered with mist at night, which rose up the side from the valley beneath; whereas the lee side was quite clear; furthermore, on calm nights, when the mist was at the bottom of the valleys, and was not blown up the sides of the hills, cases were not so frequent; but a fall of rain or thunderstorm in the day, followed by a hot sun and a wind in the evening, was a certain forerunner of it. Another fact to take into account, is that the autumn, when horses are changing their coats, is the time of year when they are more susceptible to miasmatic influences than any other.

Coincidence of outbreak of Horse-sickness and Fever in Mankind.—During the time that the epizooty of Horse-sickness was at its height, and the weather as I have described, a number of persons suffered from fever. I myself had several relapses of Peshawur fever contracted in India. This appears to point out that there is some deleterious climatic influence at work at this season of the year.

Physiography of Natal in Relation to Horse-sickness.—A glance at the map (Appendix D), will show how Natal is situated. The whole country is more or less of a basin open to the sea, sloping down from the Drakensburg Mountains on the west to the Indian Ocean on the east. It will also be seen that the whole of the watershed of South Africa is to the east, the high ground being to the south and west. Starting from the coast and following a certain parallel of latitude, the further west one proceeds, Horse-sickness diminishes; and following a meridian of longitude, it decreases to the south, where it is cold; whereas, to the north, about Barberton and the De Koop Valley, it is very severe; and on the coast in the same latitude, about Delagoa Bay, at a lower level, it is almost impossible to keep a horse alive, while a most severe and fatal form of Malarial Fever attacks human beings, one night spent on shore during the rainy season being enough to bring it on. The deduction from this is that the further west to high altitudes, and the further south to colder regions one goes, malaria in man and animals diminishes; but that, in the north, towards the equator, and east, to the low country on the sea, it increases, until it reaches its climax in the notoriously unhealthy regions about the Mozambique and Zanzibar; and the Natal, from its latitude and peculiar watershed off the surrounding highlands, is on the border-line of these malarial districts. I furthermore noticed that northerly and easterly winds prevailed during the epizooty. The great Antarctic drift current, which is shown coloured blue in the map D, coming up from the southern polar peak, strikes the Cape of Good Hope, which divides it like a wedge, deflecting the greater portion of it up the west coast, where it circulates round in the South Atlantic to the coast of South America, forming the southern Sargossa Sea. A small portion does run up the east coast, which fact is well known to the steamer captains, who, on the voyage from Cape Town to the east coast ports, stand in close to the shore to take advantage of it. Another current shown red in the map, coming from the Bay of Bengal and the Straits of Malacca, runs down in a southerly direction, through the Mozambique Channel. The north-east wind, which, as I have said before, is the prevailing one at this season of the year,

coming as it does from about the hottest part of the world, is hot and dry, and ready to absorb moisture. This it is not able to do to its full capabilities, from the ocean being kept heated by the influence of the warm current, but on coming under the influence of the cold in-shore current, it does so to a certain extent. I say to a certain extent, as its velocity carries it to the land, and most of the moisture is absorbed from the brackish river-mouths, which are lying stagnant under an almost tropical sun. An experience gathered on the west coast of Africa, and the tropical parts of South and Central America, goes to show that stagnant brackish water is a fruitful source of malaria. If this theory be correct, it would account for Horse-sickness being more prevalent on the low-lying lands than in the mountains, and diminishing in the southern and colder regions of the Cape Colony.

Form of Horse-sickness in 1887.—The general form this disease took this year was that described by Messrs. Lambert, Rutherford, and Wiltshire, as "Dik Kop" and "Blue Tongue," although there were a number of cases of the pneumonic form. In the majority of cases, animals were first noticed to be ill in the evening, the first symptom being that they did not eat their evening feed with their usual zest, although they had been perfectly well and working all day. In the great majority of cases, I noticed that the pneumonic form was much more fatal and rapid than the others, and also much more intractable to treatment.

Mules less Susceptible to the Disease than Horses.—I noticed that mules appeared to resist the disease better than horses, whether from any modification of the miasma, or from the well-known hardier constitution of the mule, I cannot say.

Supposed Exemption of Donkeys from the Disease.—I could not hear of donkeys dying in Pietermaritzburg, but then there are not many of them used here, though up at De Kopp and Barberton Gold Fields they died in large numbers. Donkeys were supposed to be proof against Horse-sickness, and were largely imported to these regions; but now bullocks are employed, and although the mortality amongst solipeds was great, ruminants were exempted and did well.

The Lung form of Horse-sickness.—Some solipeds were at once attacked with the pneumonic form of the disease, but not many. This usually supervened on the Blue Tongue or Dik Kop. An animal would be admitted to the sick lines in the evening, reported not to have eaten his evening feed well. On examination, the conjunctiva and Schneiderian membranes would be found to be somewhat congested, but not to any very great extent. The pulse would be about fifty beats per minute, a little full and hard in character, and the respiration normal. The tongue and mouth would be a little dry and hot, with considerable thirst and loss of appetite; the bowels invariably costive, the fæces being passed in small, hard, dry pellets. In the urine nothing could be observed, neither could I at any time detect any bacilli present in the blood. The temperature taken *per rectum* was usually about 102° F. to 104° F., but in the course of a few hours it would run up to 105, 106, or even 107° F., these last ones always indicating a fatal termination. After a period varying from two or three to twenty-four or forty-eight hours, a thick viscid discharge, more or less tinged with yellow, came from the nostrils; this was speedily followed by the well-known difficulty in breathing, the respiratory movement being painful, and laboured in a varying degree. By treatment, these symptoms would sometimes subside (particularly with mules), and the nasal discharge with it, the animal relapsing into its former condition, but very prostrate. These pneumonic attacks came on at intervals of six to twelve hours, increasing in violence each attack, and weakening the animal more and more, till at last, after the third or fourth, he died. The temperature

rose and fell about one degree F. morning and evening, but I did not notice that the pulmonary paroxysm when it came on, made any alteration. This rise and fall took place with great regularity till an hour or two before death, when it fell several degrees below normal to 98° F. and 97° F. The cases in which pulmonary symptoms manifested themselves from the commencement, comported themselves as described by Messrs. Lambert and Rutherford.

Complication of the Disease.—Several cases were much complicated. In two mules, on the second day after the commencement of the attack, the disease degenerated into a low typhoid condition, with crimson mucous membranes, exudation of blood from the skin, particularly in the bends of the hocks and knees, somewhat resembling the usual symptoms of Purpura Hæmorrhagica. With both these animals there was a peculiar foetid smell, and both cases terminated fatally. Great œdema, especially of the hind limbs, was another complication, with indolent sloughing, which discharged a thin ichorous pus. In several instances, cerebral disturbance took place. One very remarkable one occurred in the 6th Dragoons. The animal had been suffering from "Dik Kop" in the usual manner, when he was found to be blind. On examination I found him to be completely amaurotic, both pupils being widely dilated and insensible to light, with paralysis of the lower lip and muscles on both sides of the face supplied by the superior maxillary branch of the fifth nerve. There was a well-marked venous pulse in the jugular vein, and the second sound of the heart was almost lost. I think the origin of these symptoms was due to a clot formed in the heart from absorption of morbid material, with a secondary clot at the base of the brain interfering with the functions of the optic and fifth nerves, possibly caused by an embolus. As I was at Grey Town inquiring about the outbreak of Anthrax amongst Mr. Boothes' sheep, I was unable to be present at the *post-mortem* inquiry.

Period of Latency of Horse-sickness.—The question as to the period of incubation, I am unable to determine with any certainty, nor in my experiments have I been able to reproduce the disease; but there is a general opinion entertained in the colony that it is ten days. This opinion is founded on practical experience, although there is no positive or experimental proof that such is the case. At Etchowe, in Zululand, which, although north of Pietermaritzburg, lat. 28.54 S., long. 31.30 E. and near the coast, is of considerable elevation (2375 feet) above the sea level, Horse-sickness is most uncommon, and Veterinary Surgeon Finlayson, A.V.D., the officer in charge, informs me that all the cases that have come under his observation there have been animals that have been in the low-lying country, surrounding it within ten days' journey, which fact gives some colour to the prevailing theory on the matter.

Non-Success of Medical Treatment of Horse-sickness.—I regret to say that, in addition to the exhaustive experiments of Mr. Rutherford, I have tried almost every drug I could think of, and with but little success. Large subcutaneous injections of quinine undoubtedly had the effect of lowering the temperature, and some few cases did well with it. Carbolic acid, also, I had a few good results from, combined with salines, especially sulphate of magnesia and chlorate of potash, with large quantities of stimulants. In the pneumonic form I found that both fomentations and packing had the most injurious results; the first few cases I tried with it becoming rapidly worse in the most astounding manner. Antifebrine and antipyrine have both been highly spoken of lately in the human subject, and I intend to give both these drugs a trial the first opportunity.

Anthrax in a Mule.—Since commencing this report I had the chance of seeing an animal (a mule) that died of Anthrax on the 20th July. The *post-mortem* appearances (for I did not see it during life) were the classical ones

of Anthrax, particularly the absence of any froth from the nostrils, and the softened condition of the spleen. From the blood of this animal taken in the usual manner, I inoculated a full-grown guinea-pig that I before had inoculated three times with the blood of Horse-sickness. This animal died in about twelve hours, with all the appearances of Anthrax. The typical bacillus I found in its blood and tissues.

Facts and Observations in this Interim Report to be Re-considered next Horse-sickness Season.—In conclusion, I would beg to be allowed to remark, that in submitting this report, the statements and conclusions I have arrived at are entirely drawn from the experiments I have made and the facts I have observed during my stay in the colony. It is quite possible that I have made mistakes, but during the next sickly season I propose to again commence another series of experiments, and perhaps some new light may be thrown on the matter thereby. If so, and Horse-sickness proves to be communicable, then I must ask you to allow me the right to alter or withdraw any of the views or theories I have expressed, if they are untenable.

SOME OF THE RELATIONS OF VETERINARY TO SANITARY SCIENCE.

BY ARCHIBALD ROBINSON, F.R.C.V.S., GREENOCK.

(Continued from p. 324, vol. xxv.)

Respecting the temperature in cooking which the virus will resist, there exists, contrary to what might be expected from the remark of Dr. de Lamalleree, some information.

M. Toussaint, to whom the credit belongs of having first cultivated the microbe of Tuberculosis, instituted in 1881 a series of experiments, from which he learnt that a temperature of 52° C. (125·3° F.) was not sufficient to destroy the virus, this temperature being in excess of that at which steak is often cooked. Continuing these experiments, he discovered that even after being submitted to a temperature of 71° C. (159·4° F.) the virus could still be successfully inoculated.

In view of the prevalence of Tuberculosis in our animals, these experiments point to the necessity of a much more thorough control of our meat and also of our milk supply. The majority of observers seem to consider that the milk of tuberculous animals is only dangerous when the mammary gland is affected, but Dr. Bang, of the Veterinary School of Copenhagen, as well as some others who have also made experiments in this direction, conclude that in some cases (though not in all) of general Tuberculosis, the disease can be communicated by means of the milk while the mammæ still appear to be healthy. Dr. Bang also quotes a case where a child brought up on a cow's milk whose mammary gland was the seat of tubercular alterations, died, at six months old, of Consumption.

Notwithstanding the fact that recent scientific research has made the duty of prohibiting the use of the flesh of tuberculous animals incumbent on us, we are still more lax in the matter than they appear to have been in certain parts of the Continent in the fourteenth, fifteenth, sixteenth, seventeenth, and eighteenth centuries. For, according to an article in last month's *Recueil de Médecine Vétérinaire*, by M. Ch. Morot, a number of the cities of France prohibited the use of the flesh of animals suffering from this disease.

For very many years it has been looked upon by some in this country with more than suspicion, and from 1865 up till 1874 my father was in the habit of condemning all cases of general Tuberculosis, and in cases where the

disease seemed to be localised, of condemning the viscera. Having myself been privileged to follow a series of experiments on its transmission from bovines to porcines, both by inoculation and ingestion, by M. St. Cyr, at the Lyons Veterinary School, in 1873, my recommendation in Greenock to our local authority to destroy all carcasses, no matter how slightly affected, has been adopted since 1874.

More than this, however, is needed, gentlemen, for it appears to me that veterinary inspectors to local authorities ought to be incorporated in the Public Health Department, and that our dairy animals should be regularly visited and examined. The discovery of the bacillus Tuberculosis by Koch, which, although it only occurred in 1882, is so well known and made use of that few of our physicians neglect the clinical examination of the expectorations and other discharges in suspected cases. It will have been noticed that reference was made to a series of experiments by M. Toussaint in 1881. This may appear to contradict the statement that M. Koch discovered the bacillus, but such, however, is not precisely the case. In 1881 the process of staining, by which means Koch recognised the bacillus, was not known, and as Toussaint's examinations (microscopically) appear to have referred to his cultivated organisms, there seems little reason to doubt that what he described at that time as micrococci were the spores of the bacillus.

It ought to be one of the duties of veterinary inspectors to microscopically examine the milk from suspicious udders, as in some cases what appears to be only slight induration of portion of a mammary gland is the indication of tubercular infection which microscopical examination alone can verify, and for a considerable time the cow may continue to milk well and give no indications of ill health.

In the event of the State giving no compensation in cases of Tuberculosis, as at present, the sale of a cow's milk in which the bacillus is found should be prohibited, and if the proprietor insist on using it himself, he should, if possible, be prevailed on to subject it to a temperature of 212° F.

A very popular idea exists that when a child is brought up on the bottle, it should only have one cow's milk. There seems to me in this the grave objection that unless the cow is subjected to a very careful examination, the milk of one cow, if affected with Tuberculosis, may contain a far larger quantity of tubercle bacilli than if the milk were taken from the total yield of a dairy in which the majority of the animals would probably be healthy.

Gentlemen, so much of your valuable time has already been taken up, that it would be presumptive to encroach on it by discussing the numerous other diseases which are communicable from animals to man. Many more than are at present known will, in all probability, be shortly added to the already long list, by means of the improved methods of pathological research. Recently, as you are all probably aware, Drs. Power and Klein pretend to have traced an outbreak of Scarlet Fever to a disease of the cow. This, however, like Professor Verneuil's idea that Tetanus is of equine origin, requires further investigation. Of the identity of the diseases Anthrax, Glanders, Foot-and-mouth Disease, Rabies, Diphtheria, Tuberculosis, and of their intercommunicability in various animals, man included, there can be no doubt. Of the similarity of the organism in Actinomycosis in man and animals, and of the injurious effects of the flesh of animals that have died of septic affections, such as Puerperal Fever, there is abundant evidence, and the presence of parasites, the more common of which in this country are the trichina and the cysticercus cellulosæ, the latter having been met with in the human subject, not only as the adult tinea, but also in the cystic form, all render the relations of veterinary to sanitary science so intimate that you will scarcely consider it presumption on my part to offer it as my opinion

that it is really necessary for the proper protection of the public that all animal food should be submitted to the inspection of qualified veterinarians.

Allow me to thank you, gentlemen, for having done me the honour of listening to this paper; and, in conclusion, to suggest that, from what has been said—and but for the already too great trespass on your attention, from much more that might be said—the time has surely come when the universities of this country might with benefit imitate the French, and institute a Chair of Comparative Pathology.

In 1881 the celebrated veterinarian, the late Professor Bouley, who at his death occupied the distinguished position of President of the French Academy of Sciences, gave his inaugural address on Comparative Pathology; and the no less distinguished veterinarian, Professor Chauveau, who succeeded him as Inspector-General of the French Veterinary Schools, now fills the Chair of Comparative Pathology at the Museum of Natural History in Paris.

The inauguration of chairs of this kind, and the modification of the laws interfering with pathological investigations, would greatly assist in elucidating many points bearing directly and indirectly on the public health, and far more than repay for the sacrifice of the life of some of the less important of our animals.

THE EXTINCTION OF CONTAGIOUS PLEURO-PNEUMONIA AND SWINE PLAGUE.

AN influential deputation, representing the Royal Agricultural Society, the Smithfield and Farmers' Clubs, and the Central Chamber of Agriculture, waited upon Lord John Manners at the Privy Council Office on December 9th to urge upon the Council the necessity for taking rigorous measures to stamp out Pleuro-pneumonia and Swine Fever. Among the gentlemen composing the deputation were Earls Spencer, Feversham, and Jersey, Viscount Ebrington, Mr. Henry Chaplin, and Mr. C. W. Gray, Members of Parliament. Lord Feversham introduced the deputation. He was of opinion that rigorous slaughter could alone put a stop to these diseases in this country. Not only the animals affected, but those which had been brought in contact with the infected animals should be killed. Mr. Duckham employed similar terms, and remarked that one animal had been sufficient to spread the disease in the United States. Mr. Jacob Wilson, in the absence of Sir Matthew White Ridley, spoke on behalf of the Royal Agricultural Society. He cited the example of America and Denmark as one which should be followed by this country. At one time Denmark suffered more than any other country from Pleuro-pneumonia; but to-day, thanks to the vigorous methods adopted, there was not a single case in the peninsula. Lord Jersey handed in a resolution from the Central Chamber of Agriculture supporting the deputation. He trusted that steps would be taken to induce the authorities in Ireland to be more stringent in the application of the regulations with regard to diseased cattle. Mr. Howard presented a resolution from the Short-horn Society; and other gentlemen having spoken, Lord John Manners replied. Apologising for the absence, on account of a long-standing engagement in the country, of Lord Cranbrook, he said he was fully aware of the disastrous effects of the disease complained of, and he fully sympathised with and shared the views of the deputation. The Privy Council were actively in correspondence with the Irish Privy Council, and nothing should be left undone by the English department to bring the regulations in Ireland into conformity with those of this country. His earnest hope was that, before the winter was over, steps would be resolved upon which would effectually stamp out the plague. The deputation thanked Lord John Manners, and withdrew.

PRESENTATION TO PROFESSOR MACQUEEN, F.R.C.V.S.

ON the 13th December, in the Langham Hotel, Buchanan Street, the students of the Glasgow Veterinary College met to do honour to Professor Macqueen, on the occasion of resigning his position at the college, which he has held for upwards of ten years. Professor Limont, M.A., M.B., presided. Messrs. Begg and A. Macqueen were vice-chairmen.

During the evening Mr. M. GRAHAM, in an appropriate speech on behalf of his fellow-students, made the presentation. This consisted of a large case of instruments and a massive gold pendant from the students, and of a magnificent illuminated address from the Glasgow Veterinary Medical Association.

The address bore the following inscription:—

“TO JAMES MACQUEEN, F.R.C.V.S.

“SIR,—On behalf of the members of the Glasgow Veterinary Medical Association, on the occasion of your leaving the Glasgow Veterinary College, we desire to express the admiration and goodwill you have generated in this Association.

“As chairman of the meetings of this Society, you spared neither time nor energy, and discharged the duties with ability and fairness. And, in your judicious and clear summing-up of the discussions, you gave us much valuable information in a happy way, and at a time when its significance was clear to all present. Your career in connection with the Glasgow Veterinary College has been a long and honourable one.

“As Lecturer on Anatomy for so many years, you will be long remembered for the clear, decisive, and accurate style which characterised your lectures, and for the valuable aid you afforded to students in the dissecting-room. We have all, whether past or present students, to gratefully acknowledge what we owe to your work in this department.

“Of you, as Lecturer on Materia Medica and on Morbid Anatomy, much might be said, but the success of your students at examinations has shown the ability with which you taught these subjects.

“In clinical teaching, your professional skill and manner of imparting information to pupils, and the watchful guidance of us in the many operations done under your eye, have been highly appreciated and acknowledged by all.

“In private, to those of us who have had the privilege of knowing you, friendly intercourse with you has always been an experience of the most genial and genuine character.

“You have the good wishes of this Society in the new sphere upon which you are about to enter.

“May you long be spared to further the cause of a noble and useful profession.

“Signed, on behalf of the above-named Association, by Principal McCall, Professors Cooke, Limont, and Tweedley; Messrs. Begg, Renfrew, Houston, and A. Macqueen, veterinary surgeons, and by thirty-three students, representing office-bearers and members of the committee.”

Professor MACQUEEN returned thanks in suitable and becoming terms, and gave a most interesting sketch of his career prior to entering the college.

By song and sentiment many contributed to make a very enjoyable evening, and one that is likely to be remembered by all who were present, for many years to come.

INSTRUMENTS AND APPLIANCES.

WE have great pleasure in calling the attention of the veterinary profession to Messrs. Swift and Son's new bacteriological microscope, which is also well suited for other histological work. It has a good coarse focussing adjust-

ment by rack and pinion, and an improved fine adjustment; it is fitted under the stage, with a tube for the reception of a condenser, spot lens, and polariscope, and the stand is solid and firm in construction. There are two eye pieces and an inch and one-twelfths homogeneous immersion objectives, and an Abbe's condenser. We have carefully compared the one-twelfths objective with several sold by other makers, and find that it does more than hold its own. In fact, it is as good as a Zeiss one-twelfths old formula, which costs £15 15s. For all-round work a good one-sixth objective might be added.

We strongly recommend those gentlemen who wish to keep up with the times, to pay a visit to Messrs. Swift's establishment in Tottenham Court Road, where they will get full value for their money.

Reviews.

SOUNDNESS AND AGE OF HORSES. By M. HORACE HAYES, M.R.C.V.S. (London: W. Thacker and Co. 1887.)

In this addition to his numerous popular books on horses, Captain Hayes has ventured to offer to the public a veterinary and legal guide to the examination of these animals for soundness, and also furnishes information with regard to ascertaining their age by inspection of the teeth. In the preface, the author informs us that his object in writing the book has been: (1) To define, from a strictly legal point of view, what is meant by the term "soundness"; (2) To furnish a guide, as to procedure and detail, to the examination of horses for soundness; (3) To supply, as far as possible, references to decisions in Court on the subject, with appropriate quotations; (4) To separate those diseases, alterations of structure, and other defects that might be considered in themselves absolute unsoundness, from those which, from their position or degree, may or may not be unsoundness—judicial rulings being accepted when found to apply, and veterinary opinions when these did not serve; (5) Hereditary diseases; and (6) To discuss the question of age in its relation to examinations. In treating of the latter, acknowledgment is made of indebtedness to the excellent work of MM. Goubaux and Barrier on *l'Extérieur du Cheval*.

All these different points are dealt with in 110 pages, the remainder of the book being made up of drawings of the teeth at different periods of life; and so far as space allowed, the author has done well in his treatment of each of the sections. The subject is a very important, but at the same time a very intricate and difficult one to handle satisfactorily, and we think that Captain Hayes is entitled to much credit for the explicit and sensible manner in which he has discussed the many questions—some of them extremely vexed ones—which pertain to soundness and unsoundness of horses. We have not space to comment on some of his conclusions, but we may remark that with nearly all of them we agree.

We are glad to notice that he dissents from the notion that bent fore-legs are always the result of previously existing pain in them or the feet. There could be no greater error than this; for it is the fact, as veterinary

surgeons of experience and observation will testify, that the greatest proportion by far of these bent limbs is due to severe work and very seldom to pain. Many of our best racehorses have their fore-legs somewhat bowed, but this is usually congenital; while some of the safest and best hunters have the same kind of limbs. Indeed, trainers and horsemen generally prefer this condition to the opposite—the calf knee, which Captain Hayes has not alluded to. Such limbs should not, we think, be considered unsound, if free from disease.

A MANUAL OF COMPARATIVE ANATOMY OF THE DOMESTICATED QUADRUPEDS. By N. HORMASJI EDALJI SUKHIA. (Bombay: Anglo-Jewish and Vernacular Press. 1887.)

We have had occasion several times recently to remark on the rapid progress veterinary medicine—or at least its literature—is making in India, the number of books on it published within the last few years by army veterinary surgeons stationed there being somewhat phenomenal, when compared with the little that was done in this way in preceding years. Hitherto the writers have been Englishmen, who wrote their treatises either in their own language or in one of the languages of the country. Now we have the educated native entering the literary arena, and giving us a book, not in his own familiar (though to Western peoples, strange) typography, but in good scientific English. Sahib Edalji Sukhia is a licentiate in medicine and surgery of Bombay, was for some time officiating surgeon to the Ratnagiri Civil and Leper Hospital, and has also been medical attendant to the deposed king of Burma, Theebaw, and suite. He is now an assistant surgeon in the Bombay Medical Department, and Demonstrator of, as well as Lecturer on, Anatomy and Physiology at the Government Veterinary College in that Presidency.

The little manual he has produced does not deal with the whole subject, but only with the bones, muscles and articulations, and is adapted more especially as a hand-book for his students. To such it will no doubt be found very useful, as the descriptions are brief and clear, the arrangement good, and the tables well calculated to render important service, with a minimum of trouble to the junior student. There appear to be remarkably few inaccuracies, and we must sincerely compliment the author on his meritorious achievement. Doubtless we shall soon have other works from him and his compatriots, and with their aid we shall make rapid progress in learning all that is at present unknown to us with regard to the diseases affecting animals in India, and especially in assisting us in removing those native prejudices which operate so perniciously in maintaining the destructive plagues that cost that country at least six millions of pounds annually. We shall heartily welcome as colleagues men of the stamp of Doctor Sukhia.

VACCINIA AND VARIOLA: A STUDY OF THEIR LIFE HISTORY. By J. B. BUIST, M.D., F.R.S.E. (London: J. and A. Churchill. 1887.)

This is an attempt to determine the bacteric form in which the contagium of Vaccinia and Variola exists, in the materials which are capable of reproducing these diseases by inoculation, by employing the most

modern methods adopted in bacteriological research. The author's experiments are very interesting, and afford evidence of protracted labour patiently undergone; but they will chiefly concern those men who devote themselves specially to the subject of bacteriology and the *contagia vivum*. It may be mentioned that Dr. Buist concludes, from his investigations, that the bacteric form of the true vaccine contagium is to be seen in the minute isolated spores of micrococci which are found suspended in standard vaccine lymph; that, owing to stored lymph undergoing acid fermentation when not preserved in a dry state, the opinion may be suggested that this contagium is a vegetable ferment which has become acclimatised in warm-blooded animals; and that the pathogenic properties of the vaccine and variolous materials depend on the embryonic and mature forms of bacteria which they contain.

The author appears to accept the view entertained by so many medical men in this country, that Vaccinia is merely modified Variola; but all his experiments—cultivation and inoculation—though he does not see it, in our opinion disprove the statement. Nowhere has he, or for that matter anyone else, shown that Vaccinia can be converted into Variola. Until that can be done, we are justified in retaining the opinion which we were the first in this country to enunciate, that Variola and Vaccinia are as distinct diseases as Vaccinia and Variola Ovina are, and that the one cannot be transformed into the other. Indeed, Dr. Buist himself speaks of them as two diseases.

FLAGELLATED PROTOZOA IN THE BLOOD OF DISEASED AND APPARENTLY HEALTHY ANIMALS.* BY EDGAR M. CROOKSHANK, M.B. Lond., F.R.M.S.

In a pamphlet of about sixteen pages, Professor Crookshank—after referring to the discoveries by Mitrophanow of the *Hæmatomona carasii* in the blood of the carp, and the *Hæmatomona cobitis* in that of the mud-fish; by Lewis, of a parasite in the blood of the Indian rat; and by Evans, of the "Surra parasite"—proceeds to record the result of examinations of the latter, as shown in slides lent by Dr. Evans. He examined them with 1-12 and 1-18 oil imm., and says, "These are quite sufficient at once to dispel the idea of its being a spirillum. It was obvious that it was a more highly-organized micro-parasite, presenting very peculiar and distinctive structural appearances." The author also gives the results of his work with the blood of the common brown rat of England. In twenty-five per cent. of apparently healthy animals, he found a parasite morphologically identical with that of Surra and an encysted and angular form. From our general knowledge of the life-history of the Monadinæ, it is not improbable that the two latter are immature forms of the former, but their connection has not been demonstrated, so far as we are aware. The rodent host, as Professor Crookshank very rightly observes, is in *apparent* health, but the monads are present in such swarms that we cannot refrain from the thought that they must exercise a deleterious effect.

* Reprinted from the Journal of the Royal Microscopical Society.

Professor Crookshank recommends the following provisional classification :—

Genus—*Trichomona* ; sub-genus—*Trichomona sanguinis* ; species—*T. cobitis* (mud-fish) ; *T. carasii* (carp) ; *T. Lewisi* (rat, hamster) ; *T. Evansii* (horse, mule, camel).

The author illustrates his text with a series of good photographs of the Surra parasite, and well-executed woodcuts of the other monads referred to.

The subject is well treated, and the paper is very readable, and would interest those even whose labours are not specially connected with this department of biology.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION.

A MEETING of the above Association was held at the First Avenue Hotel, London, on 25th November, 1887, Sir Henry Simpson, J.P., Windsor, President of the Association, in the chair.

There were also present—Professor Robertson, Messrs. Wragg, Sheather, Pritchard, and Villar, London ; Flanagan and Wheatley, Reading ; Simpson, Maidenhead ; Walker, Oxford ; G. A. Lepper, Aylesbury ; Barford, Southampton ; Walker, 1st Life Guards ; Raymond, A.V.D., Woolwich ; Wilkins, Lambourne ; Jones, Leicester ; Hunt and Howard, Newbury ; Slocock, Hounslow ; C. N. Page, Banbury ; Oatway, Great Stanmore ; Darling, Brucknell ; Wilson, Berkhamsted ; and Kidd, Hungerford.

The following gentlemen were present as visitors :—Messrs. J. Roalfe Cox, W. Hunting, C. Lowe, W. J. Roberts, J. E. Jarvis, N. Legg, and J. Rowe, London ; J. Fraser, Bromley ; and F. Samson, Mitcham.

After the minutes of last meeting were read and confirmed, Messrs. W. J. Mulvey (London), E. Langford (Shaftesbury), and F. T. Catway (Great Stanmore), were unanimously elected members of the Association.

Mr. WALKER (Oxford), Hon. Treasurer, submitted the statement of accounts for the past year, which showed the Association to be in a flourishing condition.

The following office-bearers were unanimously elected for the ensuing year :—President, Mr. F. W. Wragg, London ; Vice-Presidents, Mr. G. A. Drewe (Abingdon), Mr. A. Wheatley (Reading), Mr. W. Wilson (Berkhamsted), and Sir Henry Simpson (Windsor) ; Hon. Treasurer, Mr. J. P. S. Walker, Oxford ; Hon. Secretary, Mr. H. Kidd, Hungerford.

The next meeting will be held at Reading on the last Friday in February.

Mr. F. RAYMOND resumed the discussion on the lecture given by Professor Robertson at last meeting on "Inoculation as a Preventive against Pleuropneumonia." He said : Although Army veterinary surgeons in England had very little to do with cattle, when they were on foreign service they saw a great deal more of epizootic disease than they liked. During the Egyptian campaign Cattle-plague broke out at one of the ports on the coast, and it was only through the skill and energy of Mr. Rayment, who was now in India, that it was stopped. The most important part of the inspection connected with epizootic diseases in the up-country in India was entirely in the hands of members of the Army Veterinary Department, who, therefore, saw the diseases on a scale which far exceeded anything that was likely to be met with in England, though it was impossible for them to have the same

knowledge of special animals as many of the cattle inspectors in this country had. The question of Pleuro-pneumonia had greatly increased in public interest since the last meeting. A very important deputation had waited on the Privy Council, and even in Ireland inquiries were beginning to be made. The Committee on Agriculture of the Royal Dublin Society had appointed a sub-committee to investigate the conditions under which live stock were sent from Ireland, and to inquire into the alleged prevalence of Pleuro-pneumonia. The Association might, therefore, take the opportunity of drawing the attention of the profession and the public to the matter by passing a resolution in favour of wholesale destruction or inoculation, or both, as the case might be. Professor Robertson had said that "facts appear to indicate that protection can be afforded by inoculation." That was a very cautious remark, and most people who had gone into the statistics would be able to take a more positive stand. There could not be the slightest doubt that inoculation had a great effect in causing immunity from the disease. Of course Professor Robertson was careful in his expression, as a man ought to be who might at any time be called upon to institute a scientific inquiry. He was quite right not to bind himself in any way; but an ordinary veterinary surgeon would have no hesitation in saying that inoculation was a great preventive. Another remark in the paper was that "from evidence produced there does not seem to be much danger from contamination." That was a subject on which he had not been able to satisfy himself. It might be of great interest if the members of the Association would record their experiences as to whether, when a healthy animal had been inoculated for Pleuro-pneumonia it could be safely sent into a herd of healthy cattle without causing an outbreak of disease. Before a Commission in South Africa, in 1877, a case was reported of an ox which had apparently recovered from a slight attack of the disease, but communicated it to a herd year after year for three years. Professor Robertson advocated inoculation with modified virus, and he (Mr. Raymond) agreed with him. Professor M'Call recommended inoculation of calves, and said that one attack rendered the animal free for the future. Professor Walley, on the other hand, held the opposite opinion. When professors of such eminence differed, who was to decide? A gentleman in South Africa, who inoculated 900 cattle in about ten years, found that the ratio of loss from inoculation was 1·34 per cent. Recently, in Belgium, Poels and Nolen succeeded in isolating the microbe of Pleuro-pneumonia, and inoculated at least 100 cattle, of which none died, although in a suspected locality. They say, "Altogether we inoculated eight hundred cattle, some with lymph before coagulation could take place, others with the coagulum which afterwards forms in the lymph, and the results were unusually favourable, as, with very few exceptions, the inoculation took in all cases. On the other hand the action of perfectly transparent serum is known to be very irregular; with many animals it fails of effect, and in others considerable swellings are produced. The explanation of these various effects appears to be as follows:—As before stated, the clear serum contains extremely few micrococci of Pleuro-pneumonia, and for this reason inoculations done with it very often fail of their proper effect, while the other micro-organisms present in the serum (bacilli among others) produce unhealthy results. The favourable results of our inoculation of eight hundred animals, in almost all of which local reaction followed without a higher death-rate, show the correctness of this explanation." He, himself, was strongly in favour of stamping out the disease, but science had made such great advance during recent years that an inquiry ought to be instituted into the effects of inoculation, with pure cultivations of the virus. If that were done, in addition to stamping out, he believed the disease would be eradicated in Great Britain.

Mr. KIDD said he had had large experience with Pleuro-pneumonia. In

two outbreaks—one herd over one hundred and thirty head and the other over eighty head—he had administered medicine internally with most satisfactory results. With regard to inoculation, the inference which he drew from the experiments of scientific men in this and other countries was that inoculation was not sufficient to arrest the spread of Pleuro-pneumonia, and so far as Great Britain and Ireland is concerned, this disease should be stamped out. The veterinary profession has been twitted with inability to eradicate it from our country; in this it is unjustly reproached, for an opportunity of trying has not been extended to it. The Legislature has had twenty years' trial, with two Acts of Parliament, and it has failed to extirpate Pleuro-pneumonia, the disease being more prevalent and widespread at the present time than it has been for a number of years, and under the Contagious Diseases (Animals) Act of 1878, Pleuro-pneumonia cannot be effectively stamped out, because the legislative machine is too clumsy, and its lever requires too much force to set the machinery in motion. He said he was convinced that the Legislature could not stamp out Pleuro-pneumonia without the aid of the qualified veterinary surgeon. It is absolutely necessary to have uniformity of action, not only in counties and boroughs, but also in the three countries. This would enable those in authority to grapple with a fresh outbreak, prevent its spread, and minimise the losses and hardships which are entailed under existing laws. Imperfect disinfection has played a most important part in the spread of this and other contagious diseases, and if Pleuro-pneumonia should ever be stamped out of our country, if thorough disinfection be not rigidly and effectively adopted, this disease will be sure to break out in fresh herds, if put into sheds where the disease had been. Mr. Kendal, M.R.C.V.S., advocated inoculation very strongly before the National Agricultural Society of Victoria recently, and said, "Whenever inoculation has failed to check the disease the failure has been due to bad virus, or the operation has not been properly performed. If every herd in which the disease breaks out were to be properly inoculated, he believes the country might be freed from the disease in two or three years," but he (Mr. Kendal) in his next sentence proves that inoculation *alone* cannot possibly rid Australia of Pleuro-pneumonia, where he says, "If there is one thing proved in regard to Pleuro-pneumonia, it is the fact that any beast which has once had the disease is never afterwards safe from communicating it." The same remark may safely be applied to inoculation in our own country. Professor Brown, in a recent Veterinary Report, says, "that in countries where inoculation is most extensively practised, Pleuro-pneumonia is always most rife, and that no country has yet been successful in getting rid of the disease by the aid of the supposed preventive."

Mr. SAMPSON said he had inoculated cows for many years, and he did not see any good in using modified virus. Great strides had been made in the way of inoculating. Some two years ago great pieces of flesh were put into the cow's tail after it was incised, and in those days the loss amounted to 20 or 25 per cent. When, however, the worsted thread soaked in the virus (which should be perfectly fresh) was used there were no ill-effects. The plan followed by the Government was quite useless, and would never stamp out the disease, any more than Glanders had been stamped out. He recommended his clients when they bought stock to put them on a separate farm for a month or six weeks, and have them inoculated before they were put into the shed. A better plan still would be to inoculate them when they were two or three months old. He had never found a cow placed in a shed after inoculation to be infected by the disease. If there was the least trace of the disease in the system the inoculation was of no use in preventing its development; but it would bring it out quicker, and, therefore, when he was called in he generally inoculated the whole stock.

Mr. W. HUNTING considered that the Act of Parliament, so far as Pleuro-pneumonia went, was a failure. The reason local authorities did not carry it out was that they did not understand it, and did not like to pay the heavy bills; but when veterinary surgeons made up their minds as between inoculation and stamping out, stockowners would follow their advice. He believed that the majority of the profession were of opinion that if proper effective stamping out measures were adopted, Pleuro-pneumonia would completely disappear. It was extremely interesting to know whether or not there was a bacillus in it, but from a sanitary point of view that was not a very important matter. What was wanted was to decide which was best, to trust to stamping out, or to combine that with inoculation. Inoculation misled by setting up an unreliable protection, and thereby prevented the carrying out of an effectual remedy, namely, the pole-axe applied to every affected animal, and those that had been in contact with them. He would like to ask if a case of Pleuro-pneumonia ever recovered, as proved by a *post-mortem* examination some time afterward. He fancied that it never did, and that an animal which once suffered from it was always a possible centre of contagion. Great Britain being an island, they could almost make sure that it should not be imported from the Continent, but Ireland was the great difficulty. Importation from one country to another could be forbidden, and surely there would be no hardship in stopping the importation from Ireland until the disease was got rid of there.

Mr. VILLAR said that no matter how inoculation was performed, a certain percentage would die; some would be ill for weeks, and nearly all would go off their feed. He always used a bit of fine tape which had been saturated with the fluid from the lung, but he took good care to get a portion of lung from a young animal, and the operation was, as a rule, successful.

Prof. PRITCHARD said that they must all remain in a difficulty with regard to the results of inoculation as a prophylactic in the case of Pleuro-pneumonia, until they could say something positive as to the period of incubation, and no man living could do that. One burning question was whether the shed in which a diseased animal had been placed was a medium of communication. He was inclined to think it was not. If it was not, then stamping out Pleuro-pneumonia in this country was simply a matter of expense, and could be done in a very short time. There was no proof that the disease could be communicated by the shed. So far as he could gather, in order that an animal might take the disease, it must have been in contact with one that had been affected. If it was simply a question of stamping out, he would rather destroy 200 sound animals than let one that was diseased escape. In inoculation some little care must be taken in obtaining the virus, and in performing the operation. If an animal which had never been in contact with others that were diseased was inoculated, the virus acted as a prophylactic; but who could say that there had been no such contact?

Mr. LEPPER said he had seen an enormous amount of Pleuro-pneumonia, and the conclusion he had come to was that there was nothing better than stamping it out. Inoculation, in his opinion, held out a false hope. Recently, close to Aylesbury, Pleuro-pneumonia appeared in some animals, and they infected other herds. The remainder were killed, and for the last two months there had been no fresh cases. He would be very loath to put healthy animals into a shed in which diseased animals had been kept, for he was satisfied that he had seen the disease spread in that way. He thought that the authorities in a district where it broke out ought not to be saddled with the whole expense of stamping out. As it was done for the good of the country at large, the money ought to come out of the imperial taxes.

Prof. ROBERTSON, in reply, said that though inoculation originated and was still carried out in Belgium, Pleuro-pneumonia was always in the ascendant

there, and the same might be said of England, Scotland, and other countries where inoculation was extensively practised. Theoretically, inoculation might be correct; practically, it was not. From his own experience he should not fear to place healthy animals in a shed where disease had existed. He was thoroughly of opinion that the only way of exterminating Pleuropneumonia was by slaughter, not only of the diseased animals, but of those herded with them. If inoculation was adopted, the cattle should be surrounded by a cordon, and prevented from leaving the locality.

The PRESIDENT said he considered himself fortunate that during his year of office such a discussion had arisen. No doubt the phases which such subjects underwent were varied and very often rapid. Because this one or that one held a positive opinion on a particular subject, it did not follow that that subject was thrashed out, and that others should sit down and accept any one's dictum. In fact, scientific men who had the strongest views on any given point were the first to admit that their opinion did not settle the question. Strong opinions had been expressed, both for and against inoculation, but the greatest opponent of inoculation would hardly attempt to deny that to a certain extent when an outbreak did occur the mortality was very much diminished if inoculation was put into practice. He thought the time must come when the subject would be investigated more fully, and when they would either utterly discard inoculation or believe in it, and decide that every animal should be inoculated as soon as it was old enough to stand the effects of it. He thought they were all very much indebted to Professor Robertson for his kindness in going, first of all, to Windsor to deliver the lecture, and then attending the present meeting to finish the debate. He proposed a cordial vote of thanks to Professor Robertson, which was unanimously carried.

Professor ROBERTSON, in acknowledging the vote, said he felt gratified if anything he had done had helped to render the meetings of the association agreeable and pleasant.

The PRESIDENT then moved the following resolution: "That the Royal Counties Veterinary Medical Association desires to thank the Royal Agricultural Society of England for initiating experiments with regard to Symptomatic Anthrax."

Mr. WRAGG seconded the resolution, and it was unanimously agreed to.

Mr. J. ROALFE COX exhibited a morbid specimen of Sarcoma affecting the jawbone of a horse, and gave a lucid description of its appearance, growth, and treatment.

Mr. WHEATLEY exhibited a tumour from the right ventricle of the brain of a mare, which weighed $1\frac{3}{4}$ ounces. He also exhibited specimens of calculi from sheep.

A cordial vote of thanks was passed to Mr. Roalfe Cox and Mr. Wheatley for their interesting specimens.

On the motion of Mr. WILSON, seconded by Professor PRITCHARD, a hearty vote of thanks was passed to the retiring President for the very able way in which he had presided over the Association during the past year.

Sir HENRY SIMPSON, in acknowledging the vote, congratulated the members upon the vitality of the Association and the good that it was doing.

H. KIDD, *Hon Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held in the County Hotel, Newcastle-on-Tyne, on Friday, November 25th, 1887, the President, Mr. D. Dudgeon, in the chair.

Present:—Professor Williams; Messrs. Nisbet, Fence Houses; J. Gofton, North Shields; D. McGregor, Bedlington; Gresty, Beamish; W. Wheatley,

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South Shields ; Stevenson, Whitburn ; G. R. Dudgeon, Sunderland ; W. A. Hancock, J. W. T. Moore, G. Elphick, H. Hunter, and the Secretary, Newcastle-on-Tyne.

Visitors :—Messrs. Bell, Carlisle ; Cameron, Berwick ; Bennett and Charlton, Newcastle-on-Tyne.

The minutes of the last meeting were taken as read.

Letters of apology for non-attendance were received from Professors Robertson and Walley ; Messrs. C. Stephenson and G. R. A. Cox, Newcastle-on-Tyne ; Thos. Greaves, Manchester ; T. Briggs, Darlington ; F. R. Stevens, Darlington ; and W. J. Mulvey, London.

The SECRETARY then read the following letter :—

Royal College of Veterinary Surgeons,
10, Red Lion Square, W.C. *Oct. 20th, 1887.*

DEAR SIR,—I am directed by the Council to officially acknowledge the receipt of your communication of the 9th June last, and to ask you to be good enough to thank the members of your honourable Society for their suggestions in regard to the examiners and examinations of this College.—I am, dear sir, yours faithfully,

ARTHUR W. HILL, *Sec.*

A. Hunter, Esq., *Hon. Sec.*

North of England Veterinary Medical Association,
New Bridge Street, Newcastle-on-Tyne.

The following members were then unanimously elected office-bearers for the ensuing year :—Mr. D. Dudgeon, President ; Messrs. J. Gofton and H. Hunter, Vice-Presidents ; Secretary and Treasurer, Mr. G. R. Dudgeon, Sunderland ; Auditors, Messrs. Moore and Hancock.

At the request of the President, Professor WILLIAMS opened out the adjourned discussion on his paper. He said, since the last meeting, several cases had occurred which quite bore out the opinion he had formed from previous experience as to the advantage of the treatment he advocated.

Mr. BELL, Carlisle, said, since he listened to Professor William's paper, he had had a very painful experience of the advantages of Professor William's treatment in his own person. When casting a horse for an operation he unfortunately got his finger fast in the chain of the hobbles, and it was very seriously damaged, the bone being exposed and the joint opened. The surgeon wished to amputate the finger at the first joint, but he objected, and suggested that the treatment recommended should be tried. This was done, and the wound healed very quickly, and he suffered very little pain after the first night, but unfortunately the joint remains stiff.

A lengthened discussion followed, in which most of the members present took part, after which the PRESIDENT and Mr. H. HUNTER introduced the question of cruelty to animals. The former more particularly alluded to the interference of the Society's officers with cases under the treatment of veterinary surgeons who may have ordered exercise or light work as conducive to their recovery. Special reference was made to a case in Sunderland in which Mr. Meikle, veterinary surgeon, was summoned, and the case dismissed, as the magistrates decided, without hearing the defence, that there was no case against the defendant, and yet on application they refused to allow costs against the Society. It was unanimously decided that in the great majority of these cases the interference of the Society was uncalled for, and even, from the Society's point of view, undesirable.

Mr. H. HUNTER then introduced the question under the following heads, and while admitting that the Society had effected a great deal of good, it was contended that, as at present administered, very great hardship and injustice was inflicted on poor people for very trivial offences, if offences they could be called :—

That the intention of cruelty was not taken sufficiently into account, and in many cases where there had been an evident effort to prevent any cruelty, convictions had taken place.

That in many cases convictions had taken place against the weight of evidence, and even when the veterinary surgeon of the Society had given evidence against them; also in a recent case when the Society's veterinary surgeon refused to appear for them, the officer proceeded with the case, which was dismissed, but yet cost the defendants about £5.

That in all cases there should be power of appeal, and in cases dismissed costs should be given against the Society.

That in many cases the evidence of the officer and policeman are greatly exaggerated.

That magistrates who are members of the Society should not adjudicate on cases of alleged cruelty.

That the time which elapses between the alleged cruelty and the issue of the summons should not exceed two or three days.

That the question often put to veterinary surgeons as to whether they would swear that an animal suffered no pain was unfair and misleading, as it was quite possible for an animal to suffer a certain amount of pain, and yet not be cruelty.

A good discussion ensued, and it was unanimously resolved that Messrs. Dudgeon and Hunter should consider before next meeting what steps should be taken to bring the views of the members of the Association before the public.

After a vote of thanks to the President and Secretary the meeting terminated.

A. HUNTER, *Hon. Sec.*

ONTARIO VETERINARY COLLEGE.

THE session of 1887-88 opened on October 26th, showing no diminution of interest from the sessions of former years.

For several days previous to the formal opening, the matriculation examinations were in progress. Students presented themselves in large numbers and from all parts of the American continent. Marked improvement was shown in the general education of the candidates, a large majority being successful—passing generally with credit to themselves.

Professor Smith, Principal of the College, delivered the opening lecture. He had fully intended at the close of last session to proceed with the erection of new buildings during the summer. The plans were all prepared and ready for the contractors, but the unfortunate strikes had destroyed all hope of proceeding with any extensive building operations for the past season. In order to accommodate the classes, a large hall had to be found, as the hall used last year is now inadequate. Fortunately, Richmond Hall, within easy distance of the College buildings, was secured. This forms a light and pleasant auditorium, capable of accommodating between four and five hundred students.

The Chair of Physiology, vacant by the lamented death of Dr. Barrett during last session, has been filled by the appointment of Dr. Peters, Demonstrator of Anatomy in the University Medical College. Dr. Peters enters upon his work with enthusiasm, and will prove a great addition to the strength of the College staff.

A new Chair, that of Pathology, has been established, which will prove to be of benefit to those studying the subject. Not only will the latest and best work of other pathologists be presented to the students, but original investigations will be carried on with special reference to the needs of veterinary science. It is proposed to give prominence to this subject, and Dr. Cavan,

who is admirably qualified for the work (having made a special study of it in Germany), has been appointed to this department.

Professor Ramsay Wright, of University College, will give this session a special course of lectures on bacteriology—a course similar to that which was so popular last session. In every department of the College work is progress and advancement to be noted. A larger number of students form the first year's class than on former occasions.

PATHOLOGICAL SOCIETY OF LONDON.

Avian Tuberculosis.

At the meeting of the above Society, held on December 6th, Mr. W. Sibley read a paper on an Epizooty of Avian Tuberculosis in a farm in Surrey, and showed specimens of the various organs diseased. Much caseating matter was expelled from the bowel, after having been discharged into its lumen from the diseased walls of the intestine, and thus left behind large pouches. The lesions presented the typical forms of bacilli. The disease generally appeared when the birds were about two years old. The whole of the abdominal organs were affected. Mention was made of one such pouch connected with the crop which attained the size of a pigeon's egg. Subpleural nodules were also present, and the larynx and trachea were diseased. Vertebral caries and caseating cervical glands were occasionally observed. Bacilli, apparently identical with those found in human Tuberculosis, were present in most of the affected organs. The nodules appeared to have little tendency to break down, but the growths tended to spread and to caseate, forming relatively large tumours. The disease was apparently an example of hereditary transmission.

ROYAL AGRICULTURAL SOCIETY.

At the monthly Council Meeting, held on December 7th, Sir JOHN THOROLD (chairman) presented the following report, which had been received from Mr. Cope of the Agricultural Department of the Privy Council Office:—

Pleuro-pneumonia was widely spread throughout Great Britain during the first nine months of this year. In Scotland the losses were very considerable, amounting to upwards of 1,240 animals. The disease was most prevalent in the county of Lanark, where no less than 349 animals were reported to have been attacked. Serious losses also occurred in the counties of Edinburgh, Fife, Forfar, and Perth. In England the disease was far less rife than in Scotland, the number of cattle reported as attacked being about 820. The following are the counties in which *Pleuro-pneumonia* was most prevalent:—Middlesex (including the metropolis), West Riding of Yorkshire, Lancashire, and Essex.

Swine Fever has continued throughout the year, and was very extensively prevalent during the summer. Since the commencement of October there has been a gradual decline in the disease, and the number of outbreaks, which in the four weeks ending October 29th amounted to 412, has decreased to 296 in the four weeks ending November 26th. The counties in which *Swine Fever* existed during the year to the greatest extent were Hants, Lancaster, Norfolk, Northampton, Somerset, Stafford, Suffolk, Wilts, and the West Riding of Yorkshire.

Anthrax.—Numerous outbreaks of *Anthrax* were reported during the nine months of the year, and the disease appeared in the following counties:—Berks, Bucks, Cambridge, Chester, Cornwall, Cumberland, Derby, Devon, Dorset, Durham, Essex, Hants, Hereford, Herts, Hunts, Kent, Lancaster, Leicester, Lincoln (Holland), Lincoln (Kesteven), Lincoln (Lindsey), Norfolk, Northampton, Northumberland, Notts, Oxford, Rutland, Salop, Somerset,

Stafford, Suffolk, Sussex (East), Warwick, Wilts, York (North Riding), York (West Riding), Isle of Ely, Pembroke, Aberdeen, Banff, Dumfries, Edinburgh, Fife, Forfar, Haddington, Lanark, Linlithgow. Total number of outbreaks in Great Britain during the nine months, 175.

Rabies.—Outbreaks of Rabies were reported from Chester, Derby, Dorset, Durham, Essex, Hants, Herts, Hunts, Kent, Lancashire, Leicester, Lincoln (Kesteven), Middlesex, Notts, Salop, Stafford, Surrey, Sussex (East), Sussex (West), Warwick, Westmoreland, Wilts, Worcester, York (West Riding), Soke of Peterborough, the Metropolis. An outbreak occurred among the deer in Richmond Park, which caused a loss of 257 animals.

Milk Scarlatina.—The inquiry into the nature of the eruptive disease of the teats of cows, which has been previously referred to under the heading of the Hendon Cow Disease, in connection with Scarlatina, has been actively carried on. Numerous outbreaks of the affection in different parts of the country have been investigated, and some important evidence as to the nature of the malady has been obtained. The investigations are not yet completed, but a preliminary report will be issued shortly.

The Committee had settled the regulations for the horse-shoeing competition, which they recommend should be held in connection with the Nottingham meeting next year.

The Committee had unanimously passed a resolution urging upon the Council to communicate at once with the Lord President of the Council requesting him to receive a deputation from the Society on the subject of the spread of Pleuro-pneumonia. The Committee asked for a renewal of the grant of £500 for the year 1888, of which sum they propose that £200 be granted on certain conditions to the Royal Veterinary College in aid of the further development of cattle pathology.

The Committee had met nine times, and made nine reports, and they recommended that the present members (with the exception of the Hon. E. K. W. Coke and Mr. A. P. Lloyd) constitute the Committee for the ensuing year, and that Mr. T. H. Miller be added to the Committee.

The Earl of FEVERSHAM announced that Lord John Manners had consented to receive a deputation from the Smithfield Club, in conjunction with any other societies that might wish to be represented, at twelve o'clock on Friday, as to the best means of stamping out Pleuro-pneumonia, now so disastrously prevalent.

Mr. DENT said he wished to know what the Council intended to advocate.

Mr. BOWEN-JONES said it seemed to him that now was the time for the Council to take very decided action, and they should endeavour to induce the Government to act through the Irish Privy Council, as Ireland was the seat of the disease. The Privy Council should order the slaughter of all animals infected with the disease, and if this were done, we should soon hear the last of Pleuro-pneumonia.

Mr. S. P. FOSTER pointed out that action should be uniform throughout the country, as it was of no use one county slaughtering infected animals if neighbouring counties did not do the same.

Mr. JOSEPH MARTIN concurred, and thought that the expense should be borne by the Imperial Exchequer.

Mr. J. HOWARD said the feeling at the Smithfield Club was unanimously in favour of setting aside the Local Authorities, and putting the responsibility upon the Government. In the Act of 1878, the Government have ample authority for dealing with the subject.

Lord EGERTON of TATTON felt that it was important that a resolution on the subject should be passed by the Council. He moved—

“That the Council desire to urge upon the Government the necessity of adopting uniform and stringent measures to stamp out all existing cases of

Pleuro-pneumonia in the country, by directing the slaughter of all animals suffering from the disease or in contact with other animals affected by the disease, and, as this action will be ineffectual unless a similar course be adopted in Ireland, to impress upon the Government the urgency of like action by the Privy Council in Ireland.

Mr. BOWEN-JONES seconded the motion, which was carried unanimously.

After some further discussion on the subject, in which Sir MASSEY LOPES, Mr. WAKEFIELD, Mr. BOWEN-JONES, and others took part, it was decided that a deputation from the Society wait upon the Lord President of the Council on Friday next, to lay before him this resolution, and to urge immediate attention to the matter.

A letter was read from the Worshipful Company of Farriers, stating that if the Society could see their way to carry out the practical examination of persons exercising, or intending to exercise, the trade of farriers, the Registration Committee of the Farriers' Company would be prepared to recommend to the Court of the Company that the freedom of the Company should be granted to those persons who successfully pass such examination.

It was unanimously resolved, on the motion of Mr. CLAY, that a special committee be appointed to consider the proposals in the letter of the Farriers' Company, and whether anything can be done to improve the scientific practice of horse-shoeing; and that such committee consist of Messrs. Clay, Cope, Gorringe, Harpley, Miller, Muntz, and Sanday, with power to add to their number.

Notes and News.

INTERNATIONAL VETERINARY CONGRESS.—The fourth International Veterinary Congress, which was held in Brussels in 1883, decided that the next Congress should be held in Paris in 1889, during the month of September, when the Universal Exhibition will be held in that city. A committee has been already formed, of which Dr. Chauveau is president, to make the necessary arrangements.

MONUMENT TO THE LATE PROFESSOR BOULEY.—It has been decided that the monument to this most distinguished member of our profession shall be inaugurated in 1889, during the International Veterinary Congress, in order to give the ceremony more *éclat* and solemnity. It is to be placed in the centre of the space comprised between the students' quarters and the old dissecting-room in the Alfort Veterinary School, the face of the figure towards the hospital court. The monument is pronounced to be a veritable work of art, and the sculptor has been allowed the privilege of exhibiting it at the next Salon in Paris.

CONGRESS ON TUBERCULOSIS.—A Congress is to assemble towards the end of next July in the Paris School of Medecine, to discuss the more serious questions in connection with Tuberculosis. It will be composed of medical men and veterinary surgeons, and the committee appointed to organise it is formed by MM. Vernéuil, Villemin, Launelogue, Cornil, Grancher, Chauveau, Butel, Leblanc, Nocard, and Rossignol.

DIPHThERIA.—According to the researches lately communicated to the Academy of Sciences by Dr. Teissier, of Lyons, the author believes that Diphtheria is, above all, an infectious malady, the germ of which, being transmitted through the medium of atmospheric dust, is absorbed through the respiratory organs. The dust emanating from manure heaps, collections of

rag or of straw, are particularly favourable for such transmission, as they constitute excellent media for the cultivation of the pathogenic germ. The pigeon and the common fowl seem to be the most active agents for the dissemination of the germs from these different infectious foci. Among the other cases which contribute to favour the receptivity of the germ, cold occupies the first place (79 out of 132). Dr. Teissier, however, remarks that the humidity of the air constitutes, without any doubt, a condition extremely propitious for the multiplication and dissemination of the germs of Diphtheria.

CONFINED AIR AND THE DEVELOPMENT OF PHTHISIS.—At a recent meeting of the Academy of Sciences of last week, Professor Brown-Séquard spoke upon a subject that he had commenced in 1869 to demonstrate—namely, the influence of confined air on the development of pulmonary Phthisis. The learned professor had performed experiments on a number of guinea-pigs, which he divided into two series. In the one series, after having inoculated the animals with tuberculous matter, they were placed in the most favourable conditions as to bedding, alimentation, and aeration. They lived at liberty under a shed opening into a garden, and where the bedding was frequently renewed. Not one of them (numbering more than a hundred) was affected by the inoculation. They manifested no sign of Phthisis, and remained perfectly healthy. The second series, however, which were inoculated in the same manner, but which were condemned to live in closed laboratories, where the air was confined, nearly all died from Phthisis.

RABBITS IN AUSTRALIA.—The offer of a prize of £25,000 by the Government of New South Wales to the discoverer of a means of killing the rabbits which are devastating the colony has attracted the attention of M. Pasteur. To-day he sends a letter on the subject to the *Temps*, suggesting ideas which he thinks may be found of use. Hitherto mineral poison has been employed to destroy the animals, but they increase with such frightful rapidity that poison has proved a very insufficient means of meeting the plague. What is wanted, M. Pasteur suggests, is a poison endowed, like the animals themselves, with life, and multiplying with similar rapidity. An attempt should, he thinks, be made to introduce a disease among the rabbits which would become epidemic. There is such a malady, known as the Hen Cholera, which has been carefully studied in his laboratory. This disease is common to poultry and rabbits. Among the experiments which he made was the following:—He shut up within a limited space a number of hens. He gave them food tainted with the microbe which is the cause of the Hen Cholera, and in a short time all of them perished. Sometimes poultry yards are devastated by epidemics of this kind, which spread, doubtless, through the tainting of food by the droppings of the first sick fowls. The same thing, he believes, would happen to rabbits, which, returning to their burrows, would there spread the disease. Nothing would be more easy than to communicate the disease to a few of the animals. Round a burrow M. Pasteur would place a movable fence, within which the rabbits would circulate in search of food. Experiments have proved that it is easy to multiply to any extent the microbes of Hen Cholera in all kinds of flesh soups. If the food of the rabbits were watered with these liquids full of microbes, the animals would catch the disease, and spread it everywhere. M. Pasteur adds that the disease of which he speaks does not attack four-footed domestic animals, and as fowls do not live in the open country, there would be no risk of destroying them.

REMOVAL OF THE UTERINE APPENDAGES OF A WOMAN BY A SOW-GELDER.—Mr. Arthur Thomson, of the Medical School, Oxford, sends the following extract from a book entitled, "Man Transformed," published in 1653, to the

British Medical Journal :—"It is an anatomical question, *an mulier castrari possit*, and it appeares, *de facto*, to have been done; but concerning the manner of operation there ariseth a great difficulty: whether they castrated women by drawing out their wombe, or by evulsion of their testicles. Both waies it is certaine that women will be brought into great danger of life; for although sows may be spaded, yet with the like security it cannot be administered in women by reason of the seat wherein they are placed, and the society they have with other parts, for he must necessarily cut both the flankes who would castrate a woman, a work full of desperate hazzard; yet it may be done with little or no danger if it be attempted by an artfull hand. And a friend of mine told me he knew a maid in Northamptonshire that was thus spaded by a sow-gelder, and escaping danger, grew thereupon very fat. A gentleman who undertooke since, in some company, to tell me this story, againe said he was present at the assizes of Northampton when this sow-gelder was arraigned for this fact. I doubt there was some mistake in the scene, for by another information, by a justice that was there, it was in Lincolnshire, and the fact done upon Lincoln Heath, and that was not his first fact, so that his first attempt might be upon the Northampton maid. This last maid's name was Margaret Brigstock; but the judges were much confounded how to give sentence upon an act against which they had no law; for, although the castration of men was felony by the law, yet there was nothing enacted against spading of women; and well might they be ignorant of such a case when Platerus, the great physician, professeth he remembereth not that ever he read or heard of such an attempt. This Clearke (for that was his name) was hanged for this last fact, but not by a law, but for robbing her of two penniworth of apples which she had in her apron."

LONG EXISTENCE OF A HORSE WITHOUT FOOD OR WATER.—Mr. Arthur Passmore relates (in *The Field*) the following regarding a horse on his brother's estate at Tomé, in Chili. The animal disappeared and was thought to have been stolen, but—"The horse we thought was stolen has been found in our own place. The poor brute had fallen down the side of a hill, and had become entangled in coils of wild creepers, and was so tied up that it could not even lie down, and in this position it had managed to exist twenty-two days without food and without water, and when found was still alive. It is now making up for lost time in the matter of feeding, though at first it was too weak to eat anything."

Obituary.

THE close of 1887 has been marked by the removal from our midst of one of the most prominent members of our profession, whose presence will be greatly missed and his death deeply deplored by a wide circle of friends and colleagues. On December 15th, William Robertson, F.R.C.V.S., Professor and Principal of the Royal Veterinary College, was seized with a fit while engaged in his office, and in a few minutes was dead. This awfully sudden death, occurring on the very day the examination of his students by the Royal College of Veterinary Surgeons commenced, cast a most painful gloom over not only his college and those connected with it, but over those who had to test the results of his anxious labours in the class room, hospital stables, and college yard. And not less will it deeply affect the minds of those, and they are very numerous, who had the great satisfaction of knowing our deceased colleague intimately, and were permitted the privilege of sharing in his sterling friendship, and so appreciating him as he well deserved.

Professor Robertson died on the field of labour, as we fancy he would have chosen to do had Providence given him the option, and as many other scientists and toilers for the welfare of science and the benefit of humanity have done; for he was not only actively engaged in his scholastic duties, but at the moment of being called away was correcting the proofs of a work on Veterinary Surgery on which he had been closely engaged for some time. Thus, in addition to performing the important functions of administrator of his college and principal teacher, he was also striving to benefit the profession and enrich its literature, by giving us the fruits of his long and varied experience as a skilled and most successful practitioner of veterinary medicine and surgery. Surely no better testimony could be given of his devotion to his duty to his school, to his colleagues in the profession, to his science, and to his country.

Our lamented friend died at a comparatively early age, for he was only fifty-seven years old when he literally dropped his pen and closed his career for ever. As a student of the Clyde Street School in its, perhaps, brightest days, he attracted considerable notice because of his intense application to his studies, his ability, and his shrewdness. His previous training assisted him materially in the rapid progress he made; for though he had been brought up in the ways of a Scotch country practice, and had been accustomed to the hard drudgery of forge and saddle practice, he was at one time intended for the Kirk, and actually spent some time, we believe, at the Edinburgh University, studying Greek, Latin, and the other branches of learning necessary for that occupation. But his love for animals, and his early training and associations, no doubt led to the relinquishment of this idea, and made him adopt the veterinary profession. The influence and example of his chief teacher, Professor Dick, whom he much resembled in more points than one, exercised a wonderful power over him, as it did over so many of the

students of those days ; and Robertson held his preceptor in a kind of veneration which never ceased to prevail. Graduating as a certificate-holder of the Highland and Agricultural Society of Scotland in 1852, he commenced practice at Kelso, on the Tweed, and soon won a high reputation as an able practitioner, astonishing the country people by his skill, and also by his endurance, his visits—only too often long and dreary—being made on horseback, the district not being well adapted for wheels. The number of miles he at times travelled in this way, in all weathers, was quite startling. In 1860, he became a member of the Royal College, and in that year was elected a member of the Examining Board for Scotland, a position he held for the long period of twenty years, during which time he chiefly examined on cattle pathology, and was considered one of the best examiners on the board. In 1879, he became a member of Council, and remained so to the time of his death. On the retirement of Professor Simonds from the Principalship of the Royal Veterinary College in 1880, Robertson succeeded to that very responsible, and somewhat onerous post—a rather trying change for a man at his time of life, but which his professional attainments, zeal and immense industry, integrity and tact, well qualified him to occupy. Rapidly overcoming the disadvantages under which he laboured, and abolishing the obstacles he encountered, he settled down to his work, and, owing to his invincible enthusiasm and the above-mentioned qualities, rendered the school more popular and useful than it had been for many years, if ever.

He was also of great assistance to the Royal Agricultural Society of England, for which he carried out important investigations ; from early in his career he was a constant contributor to the veterinary journals ; not long ago he published his important work on "Equine Medicine," and at the moment he died, as already stated, he was correcting the proofs of a companion work on surgery.

In this brief sketch, we feel we cannot do more than give scant justice to William Robertson ; to attempt more would demand space which cannot be spared. But the great majority of our readers will be able to repair omissions, and fill in the outline we have hurriedly, but sincerely and sympathetically drawn of his character and career. To the Royal Veterinary College, his death at this juncture is little short of a serious disaster ; to the profession it is a heavy blow ; to his students, colleagues, and friends, it is a cruel deprivation ; while to his wife and family, snatched as he was from them while yet in the prime of manhood, it is an affliction which only those who have been similarly bereaved can realise, and which a merciful Providence can alone provide for ; but if sympathy can in any degree assuage grief such as this must evoke, then it will be offered to the mourners in no stinted measure.

The interment of our late friend and colleague took place at Highgate Cemetery, London, on the 19th December, and was largely attended by members of the profession and others, who paid their last respects to the memory and the remains of a good man.

Vale. Mors janua Vitæ.

Correspondence.**DAIRY COWS AND SCARLET FEVER.**

SIR,—Last February Dr. Klein made an inquiry which, to him, appeared to establish the fact that milch cows could suffer from the horrible disease, Scarlet Fever. His conclusions were eagerly adopted by several influential organs of the daily press and by, *mirabile dictu*, the medical journals, to the great amazement of all who rightly think that *remarkable* discoveries should be received with caution. The veterinary profession was blamed for not having at once accepted Dr. Klein's investigations, and was charged with opposing inquiry when it was only acting with wise reserve. At the instance of the Agricultural Department of the Privy Council, the eminent bacteriologist, Professor Crookshank, has also investigated the subject, and has come to a diametrically opposite opinion to Dr. Klein. Professor Crookshank, after an apparently exhaustive inquiry, has arrived at the conclusion that the eruptive disease of cattle blamed as the cause of Scarlet Fever, has no connection with it, and that it is merely Vaccinia; and that, so far as being hurtful, it is to be welcomed as affording a much-needed supply of Jennerian vaccine lymph, to protect us from Small-pox. Instead, therefore, of being a curse, Professor Crookshank pronounces it a blessing. Doubtless, there will still be much controversy on the point amongst the rival bacteriologists, and the veterinary profession will therefore be wise in awaiting further proofs, so as to avoid coming to a rash and premature decision.

The question may well be asked, Why such investigations in animal diseases should have to be made by medical men, and why veterinary surgeons do not take a more prominent position in these matters? The answer is easy: we want our young and ambitious men to become students of the microscope and experimental research, and especially so in the province of bacteriology, which offers a wide field for fame, and also substantial rewards. The natural home for such researches in England, as distinguished from the remaining portions of the United Kingdom, should be the Royal Veterinary College of Camden Town, and it should not be transferred to the Brown Institute. It may be said that the Veterinary College has not funds for such work; but the question again arises whether the resources now at its command are not sufficient to enable it to prosecute valuable researches in the direction indicated, and if it should succeed, would not its success afford a powerful argument to those who wish that institution to obtain Government aid?

We cannot expect to receive public assistance unless we show that we deserve it.

With regard to the eruptive diseases of the udder of cattle, which more or less simulate Vaccinia, it may be pointed out that they were fully described by Dr. George Fleming in "Veterinary Sanitary Science and Police," in 1875.

London, Dec. 17th, 1887.

JAMES LAMBERT, F.R.C.V.S.

ABNORMAL POSITION OF THE ŒSOPHAGUS.

SIR,—I found in treating a horse lately suffering from Influenza, that the Œsophagus deviated from its normal course, in winding its way down the right side of the neck. I had every opportunity of observing it, as balls, frequently given, in every case passed down the right side.

Manchester.

WM. WARD, M.R.C.V.S.

THE ARMY VETERINARY DEPARTMENT.

SIR,—Although good news does not travel with the proverbial rapidity of bad, I hear that my friends in the Army Veterinary Department are just now singing a hymn of praise to their chief, for the skill and tact with which he has succeeded in procuring a revision of the obnoxious clause 14 of the Royal Warrant of 1878. As I took upon myself to point out the anomalies of the clause in 1886, I may perhaps be permitted to constitute myself a mouthpiece for the thanks of the junior members of the Army Veterinary Department to you, sir, for permitting the subject to be ventilated, but, above all, to the principal veterinary surgeon for taking the matter up.

The success of Dr. Fleming's efforts appears to have removed a crushing feeling of insecurity, and the reaction will no doubt make itself felt at headquarters by increased zeal, if possible, in the execution of duty.

This sense of relief must have extended with far greater force to the young wives of departmental officers, for the change of status entailed by a removal from the army would have affected them very painfully.

The Army Veterinary Department, in its troubles, compares very favourably with its sister—the medical staff—whose chief is at loggerheads with his subordinates; for whereas the P.V.S. fights for his staff and wins, the P.M.O. fights against his and will, most assuredly, be well beaten. The result is that, on one hand, there is a united corps, bound to its chief by feelings of personal gratitude; on the other, a department which, if the letters in the *British Medical Journal* go for anything, appears as near mutiny as officers and gentlemen can be.

London.

J. F. OLIVER, M.R.C.V.S.

DAMAGING INTERFERENCE.

SIR,—May I draw attention to Professor Robertson's remarks at the recent meeting of the Royal Counties Veterinary Medical Association, when he explained why he was obliged to discontinue his most useful experiments with symptomatic Anthrax?

It appears that because he employed a skilled assistant his license was withdrawn, and he escaped prosecution by the skin of his teeth.

If Professor Robertson, for his private amusement, thrust hooks through the body of a wretched fish or frog and used it as live-bait, and allowed it to wriggle in agony until seized by a pike, or if he followed the advice of the fishing editor of a much-read weekly paper, and inserted a hook under the tail of a live shrimp, he would suffer no inconvenience; if he knocked some woman into a cocked hat, his punishment would probably be forty shillings or a month. But he was labouring, at the request of the leading agricultural societies, to prevent a ruinous disease of stock; he required an assistant, and employed Mr. Penberthy, *with the sanction of the inspector under the Act*; so his work was stopped by Mr. Matthews, just as the goal was in sight, and he was duly threatened with a fine of £50 or six months' imprisonment.

You will understand, sir, that Prof. Robertson was not fumbling about in the dark to find a remedy—the remedy has long been discovered and used on the Continent; he was merely adapting it to the English climate.

Of course, if he had been working at Rabies or the more fashionable Scarlatina, I could well understand every possible quibble being raised to stop his progress, because these matters are mostly connected with human life, in the public mind—human life which, after all, is of little monetary value

unless insured—and therefore a very proper subject for the sentimental interference of those who say that no amount of human suffering justifies the inoculation of a single animal to discover a cure; but “Blackleg” not merely decimates cattle, but impoverishes the farmer, and therefore I can hardly imagine that this latest intrigue of the anti-vivisectionists will be tolerated.

It is indeed saddening in these hard times, when the agriculturalist can barely subsist, that a fanatical clique, which dares not attack the amusements of the rich, but bullies the poor man and the scientist, should be able to squeeze a Minister to such an extent that he prevents the discovery for England of a remedy for one of the many drains upon the unhappy farmer’s pocket.

There is little doubt that if this business is properly taken up by the profession, and if we explain to the agricultural community how Lord Randolph’s pet Home Secretary presides over its interests, there will soon be a change in the voting or a cessation of such frivolous interference, and a return to more practical views. SACK.

TO CORRESPONDENTS.

F. H. FOSTER.—The widow of a non-qualified man, who died before the Veterinary Surgeons Act was passed, cannot legally put his name on labels or bill-heads if the designation of Veterinary Surgeon follows it.

JOE.—We answer your questions seriatim. 1. It might, though such cases must be very rare. 2. No. 3. No. 4. We never heard of such a result. 5. No. 6. It depends on circumstances. 7. The parietal portion remains. 8. It should constitute unsoundness in both. 9. Yes. You did not enclose your name.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from J. Lambert, A.V.D., London; W. Ward, Manchester; J. Cammack, Kimberley, South Africa; J. Pottinger, Poona, India; Dr. Duncan, Ontario; “Sack”; K. Lees, A.V.D., Newbridge; F. Smith, A.V.D., Aldershot; F. Duck, A.V.D., Aldershot; J. F. Oliver, London; F. Raymond, A.V.D., Woolwich; “Joe”; H. Begg, Glasgow; H. Kidd, Hungerford.

BOOKS AND PAMPHLETS: *N. H. Edalji Sukhia*, Manual of Comparative Anatomy of the Domesticated Animals; S. Rijks, Veeartsenijschool, Utrecht: *Programma der Lessen*; *Encyklopädie der Gesammten Thierheilkunde und Thierzucht*; *E. Dele*, Importation du Betail en Belgique par la Voie de Mer; *W. Dieckerhoff*, Lehrbuch der Speciellen Pathologie und Therapie für Thierärzte; *W. Hunting*, Glanders; *R. W. Burke*, Report on Surra.

JOURNALS, ETC.: *Repertorium der Thierheilkunde*; *American Veterinary Review*; *Recueil de Méd. Vétérinaire*; *Wochenschrift f. Thierheilkunde und Viehzucht*; *Der Thierarzt*; *Revue Vétérinaire*; *Clinica Veterinaria*; *Edinburgh Medical Journal*; *Journal de Méd. Vétérinaire*; *Echo Vétérinaire*; *Live Stock Journal*; *Lancet*; *American Live Stock Journal*; *Deutsche Zeitschrift f. Thiermedizin und Vergleichende Pathologie*; *Mark Lane Express*; *Journal of the Royal Agricultural Society of England*; *British Medical Journal*; *Hufschmied*; *London Medical Record*; *Journal of the National Agricultural Society of Victoria*.

NEWSPAPERS: *Nebraska Farmer*; *Eastern Counties Gazette*; *Glasgow Citizen*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

FEBRUARY, 1888.

THE CAUSES AND CHARACTER OF SO-CALLED AUSTRALIAN STRINGHALT.*

BY W. T. KENDALL, M.R.C.V.S., MELBOURNE, AUSTRALIA.

THE fact of a special meeting of your Society being held to-day for the purpose of discussing this important subject, is sufficient proof that none of the causes to which this peculiar disease has been ascribed have been accepted as entirely satisfactory.

A careful examination of the supposed causes will show that a great many discrepancies and inconsistencies will have to be cleared up before scientific men will accept any of them as final.

In the present paper I propose to submit each theory to the impartial light of reason, with the view of seeing how far they coincide with facts.

By far the most important theory which has yet been promulgated, is that the disease is due to the irritation of intestinal parasites. Mr. Stanley, F.R.C.V.S., of Sydney, was the first to advance this explanation, and it has since been confirmed in a most remarkable way by Mr. W. Allen.

The periodical return of Stringhalt at a certain season of the year, namely, during the months of January, February, and March, gives some colour to the parasite theory; but it must be remembered that these three months are the hottest and driest of the year, and are consequently the least favourable to the reproduction of these creatures. It is also maintained by the largest majority of horse-owners who have had experience of the disease—and this is also borne out by my own observations—that the disease is more prevalent during seasons of drought.

If Stringhalt is due to the irritation of intestinal parasites, how is it that it is not sometimes brought on by the irritation caused by

* A paper read before the West Bourke Agricultural Society, Melbourne Australia.

accumulations of sand and other foreign substances in the intestines, which must, in many instances, be quite as great, if not greater, than that caused by worms?

Assuming the disease to be due to irritation and reflex nervous action, it would be reasonable to suppose that the thoroughbred, which has the most highly developed nervous system, would be the most susceptible. Is this so? I venture to say that, if you turn a mixed mob of horses into what Mr. Stanley would term an infected paddock, the draught horses and half-breds would be the first to become affected.

Horses under three years old seldom become affected with Stringhalt, while they are the first to succumb to worms. Horses frequently die from the effects of worms without having shown a symptom of Stringhalt. A short time ago I made a *post-mortem* examination of a draught horse, at Brunswick, which had died from rupture of an aneurism of the aorta, caused by the strongulus armatus, and the large intestines were full of these worms. The horse had been carting heavy loads of road metal the day before it died, and had shown no signs of ill-health.

In the April number of the VETERINARY JOURNAL Mr. W. L. Williams, of Bloomington, Illinois, describes nine cases in which these wandering parasites caused death in horses, but there were no symptoms of Stringhalt exhibited in any of them. In his concluding remarks, he states that out of this number there was only one aged horse. Six cases occurred in animals under two years old, and one a foal only two months old. With regard to the symptoms, he states that we note usually a dull, extremely agonising pain, without that violence usually observed in Colic, and there is a want of those characteristic periods of relief.

If due to worms, how can we account for such a small percentage of the horses in a given paddock usually becoming affected with the disease?

Horses are frequently brought in from the paddock, apparently quite well, and after being well fed and cared for for a day or two Stringhalt suddenly develops. The disease is not confined to low-lying, damp situations, which are best calculated for the reproduction of worms. Horses recover when left in the same paddock where they acquired the disease, notwithstanding their liability to re-infection; and it is only seldom that the horse ever has a second attack.

Horses, when turned out of the stable even in the driest and hottest season of the year, and on the soundest country, will often acquire the disease in from a week to a fortnight, and the symptoms remain about the same for weeks and months as they were the first day the horse was noticed to be ailing. If this is

due to becoming infected with intestinal worms, which increase and multiply with such enormous rapidity, how is that the symptoms do not show some relative proportion to such increase?

Mr. Stanley, when speaking about this wonderful power of reproduction, and the great number and variety of worms sometimes found in one animal, mentions the case of a two-year old colt, recorded by Krause, which contained the following list:—500 ascarides, 190 oxyurides, 214 stronguli armati, several millions of stronguli tetra-canthi, 69 tape worms, 287 filaria, and 6 cystecerci. Does it not seem somewhat singular that this unfortunate animal did not have Stringhalt?

For months past—in fact, ever since Mr. Stanley's theory was first promulgated—I have made a large number of *post-mortem* examinations, both of horses that had been affected with Stringhalt, and others that have been slaughtered for the *carnivoræ* at the Zoological Gardens, with the view of ascertaining the relative proportion of worms in each. The result of these investigations has been to convince me that, taking horse for horse, worms were decidedly more numerous in horses that had never shown a sign of Stringhalt.

With regard to the kind of worms discovered, I can safely say that I have found no worms or intestinal parasites that are not common in other countries, and which I have not found equally abundant in horses in England, where this form of disease is unknown. I have here specimens of the parasites I have discovered, and it will be readily seen, on reference to any recent English work, that they have their representatives elsewhere.

I should, however, state that while the species of worms found in horses affected with Stringhalt, and others that had never had the disease, were identical, in every other instance, the tape worms produced (the *Tænia mammillana*) were found in those horses that had Stringhalt at the time they were destroyed; but, as these worms are equally common in other countries, no importance can be attached to this circumstance.

With regard to Mr. Allen's discovery, I may state in passing that I have not seen anything like the parasites he describes in any of the *post-mortem* examinations I have made; nor any trace of their ever having been present in any of the tissues, although carefully looked for with microscopic aid. If they occur in such numbers, and are of the character described, I fail to see how an animal could possibly recover from the effects their presence in such situations must inevitably produce, before they could be ultimately removed from the animal's system. As it is impossible from their size that they could bore their way through the blood vessels and enter the circulation without causing fatal hæmorrhage.

hage, it is difficult to account for the possibility of their return to the intestinal canal from such situations as the pasterns. In Mr. Allen's paper, or at least in the report, it is stated that Mr. Allen made *post-mortem* examinations for the purpose of ascertaining how they got there. Perhaps he will be good enough to enlighten us.

It will not detract from the credit of Mr. Allen's discovery, if I state that I cannot personally give credence to it until I have had ocular demonstration.

Mr. Allen is in error about Stringhalt not occurring in animals pastured near the coast. One of the worst cases I ever saw was a four-year old colt, bred and reared on the sand hummocks on the coast between Bridgewater and the Glenelg. This horse was so bad that the owner gave me permission to destroy him. The *post-mortem* revealed about half-a-dozen intestinal parasites.

Mr. Allen also states that horses affected with Stringhalt pass worms from day to day. I have had a black mare under observation in the hospital for the last three months, and, although the droppings have been examined carefully every day, not a single worm of any description has ever been noticed to come from her.

This mare had only been ailing a fortnight when she was admitted to the hospital, and the first thing I did was to give a strong course of worm medicine, which did not have the slightest apparent effect, either in regard to the expulsion of worms or removal of any of the symptoms of Stringhalt. The mare was so bad that she could not get up for weeks without assistance, nor walk out of her box to the water-trough.

THE DANDELION THEORY.

I still hold the same views in regard to this that I held when my first report was written, and will quote the arguments I then used against it:—

"The plant to which the disease has been so frequently attributed is not, however, the true dandelion, but the *Hypochaeris radicata*, commonly called flatweed or cat's ear.

"This plant is abundant in scores of paddocks where Stringhalt is unknown.

"The disease is frequently acquired where no flatweed exists.

"Horses sometimes acquire the disease in the stable, or when partially stable-fed, when they have no opportunity of getting the weed.

"Horses affected with the disease recover when left in the same paddock where the disease was acquired, and also when removed to paddocks where the plant is more abundant.

"Horses may have been pastured in the same place for months

or years, without any sign of the disease, and then, all at once, it makes its appearance.

"The plant has no poisonous properties. If it had, foals suckling their dams would be likely to become affected, the milk being the first secretion to become affected by an improper diet."

Why does not Stringhalt exist in countries where the flatweed came from?

RHEUMATIC THEORY.

That the disease bears some resemblance to Rheumatism there can be no doubt; and when it was first brought under my notice, and in the absence of personal observations, I was inclined to accept this as being the most probable explanation. Subsequent investigation, however, soon convinced me that the analogy does not go far before serious obstacles are to be met with. I need only mention one or two points to convince you that this theory will not hold water.

Rheumatism is known to be brought on, in a large majority of instances, by sudden alternations of the temperature of the body, which causes a check to the perspiration, etc.

If Stringhalt were identical with Rheumatism, it would have to be accounted for in a similar way. The fact that stable-fed working horses are of all others most exposed to these sudden changes and chills, and are least liable to become affected with Stringhalt, should go a long way to prove that it is altogether a different disease.

Rheumatism is not characterised by any exaggeration of voluntary muscular movements, the reverse of this being the rule.

It is highly improbable that hot days and cold nights, which have frequently been referred to as having a probable influence, would have the effect of acting upon different individual animals in this particular manner, and not be manifested in some other way among the rest of the mob. To better illustrate my meaning: Suppose each individual in this room were to lie out all night in the nearest paddock. The exposure would not affect us all in the same manner. I venture to say some would have congestion of the lungs or liver; others Rheumatism; whilst some would perhaps have congestion of the kidneys or inflammation of the bowels, and some probably escape any serious ill-effects. If, therefore, Stringhalt were due to sudden alternations of temperature, I maintain that other effects of this would be found concurrently with it, which, so far as I am aware, is not the case.

ERGOTISM THEORY.

Another explanation that has been offered, and I believe Mr.

Hill, M.R.C.V.S., of Christchurch, N.Z., was first to start the idea, is that the disease is due to the animal obtaining a quantity of ergotised grass.

Ergot is a peculiar vegetable fungus or spur-like growth called the *Claviceps purpurea*, which forms upon the stems of plants, especially the cultivated grasses.

In my first report, I stated that Stringhalt followed in the wake of agriculture, and that it was always most prevalent on lands that had been cultivated, or were in close proximity to such; and, as I have yet no reason to make any serious departure from this statement, there would appear to be some solid ground for further investigation, especially as there is nothing in the symptoms or nature of the disease which might not be directly or indirectly due to ergotism. What appears to me to be the most fatal objections to this theory are that cattle and sheep are just as likely to become affected with it as horses. It is also a most frequent cause of abortion, which, so far as I am aware, bears no relationship to Stringhalt. In other words, there is no evidence that abortion accompanies Stringhalt.

Until we are able to produce positive proof of the actual cause or causes of a disease, I hold that the next best thing we can do is to prove what it is not due to, and this has, to a great extent, been my policy throughout.

Whether I have succeeded in convincing you that any or all of the supposed causes I have mentioned are based on erroneous premises, remains to be seen.

It may be possible for someone to stumble accidentally upon a correct solution of the mystery, but the surest way of leading to the discovery of the cause is by endeavouring to correctly interpret the effects produced.

If a theft has been committed and the thief is unknown, the detectives at once set to work to ascertain the nature of the theft, and if suspicion is cast upon anyone, the individual is examined, and, if found innocent, search has to be made elsewhere. In like manner in dealing with diseases, the causes of which are unknown, we have to work backwards inferentially from effect to cause, and it must be at once apparent to any intelligent mind, that if we give a wrong interpretation to the effects produced, we are at once thrown out of the proper course of our inquiry.

I am convinced in my own mind that a good deal of misconception has taken place in regard to the true character of the disease in question. For example, Mr. Stanley in his official report states, under the heading "Nature," "that it is a local nervous affection characterised by an involuntary spasmodic action of the muscles of both hind legs." Others have previously described the disease as

being identical with Chorea, or St. Vitus' Dance as it is commonly called.

I hold that in the correct acceptation of the term, the characteristic jerking up of the hind legs is not an involuntary muscular action, and it is of the greatest importance that this should be distinctly understood.

When Mr. Stanley was in Melbourne a few months ago, we had some discussion in reference to this point, and he maintained that it was only a matter of hair-splitting. To my mind there is just as much difference between a voluntary and an involuntary muscular movement, as there is between a sane man and a lunatic. You have all seen dogs affected with St. Vitus' Dance after a severe attack of distemper. The peculiar twitching of the muscles takes place whether the animal is sleeping or waking, and notwithstanding the pain and weariness caused by the frequent repetitions, the animal is totally unable to resist them.

I have watched horses affected with Stringhalt for hours, and have, as before stated, had one affected with the worst form of the disease under observation for three months, and have never witnessed any involuntary muscular movements. The spasmodic snatching up of the limbs in the affected horse is merely an imperfect response to involuntary movement, which only occurs when the horse desires to move the limb; consequently, it bears no analogy whatever to the muscular twitchings in St. Vitus' Dance. It is true that when the horse is standing, and has apparently no desire to move forwards or backwards, or even to either side, he will frequently snatch up one hind foot and the other quickly afterwards; but it must be remembered that the wasted condition of the muscles, and the consequent unnatural position of the limbs, cause the animal to frequently want to change the weight from one limb to the other, and that it is impossible for him to lift his hind foot, except by a sudden jerk. This sudden spasmodic movement of the limbs is due to a want of co-ordinate action between the different sets of muscles which control the natural movements. The muscles at the back part of the leg are more wasted than those in front, and are consequently in too weak and flabby a condition to counter-balance the muscles in front which flex the hock, and instead of a natural, well-directed movement, the foot goes up with a bang, on the same principle that an unevenly balanced see-saw would do.

A careful analysis of the symptoms and *post-mortem* appearances convinces me that the wasting of the muscles is due to want of nourishment, as they are reduced in volume, pale in colour, and flabby to the touch, but readily resume their tone and volume when recovery takes place. The disease is, therefore, functional, and

not organic, in the first instance. I am well aware that in old-standing cases other complications arise, such as rupture of the ligaments of the joints, absorption of the articular cartilages, accumulations of gelatinous-looking substances between the muscles, etc., etc. But these are all after effects, produced by the unnatural position in which the limbs are placed, and the exaggerated movements they are called upon to perform.

Although this disease occurs in two or three forms, which were minutely described in my first official report, these bear sufficient resemblance to each other to be readily identified as modifications of the same disease; consequently it is unnecessary to enter into any further detail here.

This singular uniformity in the general characteristics of a disease, which occurs under such a variety of circumstances and surroundings, renders it extremely difficult to discover anything like a similar uniformity of any particular condition or circumstance under which animals acquiring the disease are placed.

Stringhalt is met with under almost every variety of soil, locality, and situation which can be found in the colony. It is found on rich alluvial flats, and on dry sandy ranges, on limestone, basalt, and sandstone formations, on chocolate soils, and on clay soils. It occurs in well-wooded, sheltered situations, on the bleak, open plains, and on high, bare hills, on coast land and in inland valleys.

I am now going to drop the term Stringhalt altogether, for it has been recognised on all hands to be an erroneous one, and tell you that almost as many cattle are affected with it as horses, and that I believe the disease I was sent by Government to investigate in the Western District to be due to the same cause or causes.

It affects animals of all ages, but adult animals are by far the most susceptible. There is, therefore, so far as we have gone, no uniformity in any of the circumstances which accompany it, or to which we can in any way attribute its production.

There are, however, some features and conditions which are almost, if not invariably, present, and to these and others which may yet be found to exist we must look for the probable cause.

The most important point for our consideration is the fact, that it is during the three hottest and driest months of the year that the disease makes its appearance, and that at any other time horses and cattle may be turned on infected country with comparative safety. It is true that now and then a case may occur a few weeks earlier or later than the time mentioned, but these exceptions only prove the rule. As already stated, this is the hottest and driest season of the year. Heat and drought may therefore be regarded as constant attendant circumstances. The only other

condition that occurs to my mind at present as being an almost equally constant accompaniment in all districts where the disease is found, is bad water. The heat and drought cause animals to require a large quantity of water when the supply is the lowest and the quality the worst. At this season of the year the water-holes, which are the only sources of supply in most districts, are the most perfect nurseries for all kinds of infusorial and germ life. The constant evaporation and the frequent visits of thirsty animals, tends to still more concentrate their decaying and living contents, and the mystery to me is that we do not have more diseases than have yet been discovered.

I have known cases of the disease under question to have occurred in places where animals had access to running streams; but these so-called streams are little better than stagnant pools, the water at this season being warm and impregnated with animal and vegetable matter, in a state of decomposition and full of organic life.

The conclusion I have arrived at after a somewhat lengthened inquiry is, that this disease, like many other enzootics, is due to the introduction into the animal's system of some minute germ or bacillus, which lives upon and multiplies within the blood, and after a certain period is passed off by the various emunctories of the body; while it is in the blood, it so alters the composition of that fluid that it is incapable of giving the necessary nourishment to the more remote parts of the body, and so the muscles of locomotion are not in a fit state to respond correctly to the direction of the will.

Whatever this *materies morbi* or disease-producing element may be, it is evident that it remains for a considerable period in the animal's system. Dozens of horses, as well as cattle, show no signs of disease when they leave the paddock, but when they have been ridden or driven for a distance it suddenly develops. This may occur in horses when being brought in from the paddock, or after they have been in the stable for a week or more. The performing a journey or doing work may, therefore, be looked upon as the exciting cause of the disease. This is not always necessary, however, to produce it, as many horses become affected in the paddock without being put to work. In these cases it is evident that the disease-producing element is sufficiently abundant in the animal's system to give rise to the well-known effects, without any particular exciting cause. It is also quite probable that horses that escape having the disease, although running in the same paddock, and being placed under precisely similar circumstances to those which develop it, escape only because there is an absence of any exciting cause.

I believe that in many cases we could develop it in at least half

the horses in any given paddock when the disease breaks out, simply by submitting them to severe exertion and then turning them out again when sweating.

The muscles of the thighs are often observed to be slightly wasted before the characteristic spasmodic action of the limbs or knuckling over at the fetlocks is noticed. It is also evident that, whatever the primary or predisposing cause is, it remains latent in the system for a certain limited time, and then passes off, and there is no further danger till the following season. This, to my mind, points emphatically to some disease germ which enters the blood to reproduce and pass off again, leaving on some animals effects which take months to recover from; whilst others apparently none the worse for having acted the part of travelling nurseries.

I trust the few scattered reflections which I have attempted to focus have not been uninteresting, and that the hurried glance we have cast over both old ground and new may be of some benefit.

I could write and say a great deal more on the subject, but will not trespass further on your time.

IS TETANUS A CONTAGIOUS DISEASE?

BY A. JOHNSTON, M.R.C.V.S., PERTH.

A RECENT instance in my practice has caused me, like the Editor of the Journal, to "waver in my opinion" that Tetanus was non-contagious.

It is my experience that I have rarely had a solitary case of this great bugbear of a practitioner's life. As a rule several cases, even miles apart, have occurred about the same time, giving an epizootic appearance; but the following facts are new in my experience:—On 15th December a horse was brought to me for advice; he had brought an empty cart a distance of over two miles. I had no difficulty in diagnosing Tetanus, especially as I had had the horse under treatment exactly a month before for suppuration of the sole of a hind foot, the result of a gathered nail. Of course, I could not allow the horse to take home the load for which he had come in, so a mare was borrowed from a dealer to take his place. All the horse's harness, *except the collar*, was transferred to the mare, and she took home his load, and was put into his stall. In two days she was sent home with her shoulders slightly abraded. On the 23rd I was called to her, and found her in a moribund condition from Tetanus. She was destroyed as an act of mercy on the 26th.

The horse is making a good recovery. If the disease was communicated to the mare from the horse, one point is settled, viz., that the period of incubation is short, as the mare must have been ill a day or two before I saw her.

SURRA; OR PERNICIOUS ANÆMIA IN THE LOWER ANIMALS.

BY R. W. BURKE, M.R.C.V.S., A.V.D., JUBBULPORE, INDIA.

(Continued from p. 12.)

The explanation which on many grounds has recommended itself, as accounting more satisfactorily for the phenomena observed, is that the injurious effects produced by bacteria are due, not only to what they take or what they excrete, but what they leave in different cases, and this is closely associated with the imperious demand they make for oxygen. The *bacilli anthracis* being ærobie, they must obtain the oxygen they require for the process of life from the tissues by which they are surrounded; and when oxygen is withdrawn from such complex compounds as those which occur in an animal's tissues, after an apparent fictitious improvement, the elements enter into new combinations, and then, under the name of ptomaines are believed to be the really poisonous agents. An animal's body is capable of resisting the action of such foreign agents probably better than that of active and living organisms, and so long as the poisonous chemical agents do not occur in excess, only partial or modified harm comes from their action. Principal Veterinary Surgeon Oliphant, in his D. O. dated Umballa, Dec. 21, 1886, observes—"Formerly only such cases as died were considered as Anthrax, whilst numerous other cases occurred at the same time, which went unrecognised. Veterinary Surgeon Mann was one of the first, if not the first, to bring this prominently to notice, and in an outbreak here, in N.B. Royal Horse Artillery, last year, in which the most careful taking of temperature of *all* horses was carried out, only a comparatively small percentage of deaths occurred, *and these principally in the beginning*. In the late outbreaks at Rawulpindee and Multan, the nature of the disease was clearly set at rest by demonstration of the *bacillus anthracis* under the microscope."

And now a few words on the subject of the parasites in Surra, for it expresses all of general importance regarding the pathology of the disease. Does Surra depend on the presence of the parasites in the system, or is it the result of a combination of many evil influences, among which may be mentioned impure air, stagnant water, and impure food-supply? That it is directly produced by

the action of the parasites, we conclude from the evidence produced by Dr. Evans in the first instance, the disease having been conveyed by inoculation to at least three animals; while other evils I have enumerated above may be regarded as intermediate causes of outbreaks of Surra. These influences probably predispose the animals to an attack of Surra, as well as favour the growth and spread of the parasites. However, one part of the evidence with regard to the action of the latter is incomplete. It has not yet been shown, although it is believed, that they alone cause the disease when inoculated into healthy animals after cultivation, apart from the blood in which they are witnessed. Nor is it certain that their action is in any way analogous to that of bacteria. It has not yet been shown at least how bacteria produce their injurious effects upon the system; it is probable that they do so in a manner which is different to that of parasites higher in the scale of development, as, for example, those of Surra, and other helminths causing disease. The action of the Surra parasite is described as that of "tearing," "dragging," or "tugging" at the blood-corpuscles. Is the action of the *stongylus armatus* any different on the mucous coat of the intestines and intima of the blood-vessels? It is clear, however, that the action of bacteria cannot be compared with that of the latter.

I think it is desirable, whilst fully admitting that Surra is communicable by inoculation, to inquire whether this power of communicability is limited to experimental inoculation or to simple contact as well. All experience proves that this disease is communicable only by inoculation, and is *not* contagious in the ordinary sense of that term. The ordinary form in which diseases caused by bacteria are produced is by contagion, whether due to simple contact or that resulting from experimental inoculations. The ordinary form of disease due to bacteria may occur independently of experimental inoculations. Surra has never been found to occur independently of such inoculations—that is, as the result of contagion from affected animals. And this is an important difference.

Now, these experimental successes in Surra, though they are very interesting as such, are still more so as evidences of an invasion by a parasite which is much higher in the scale of development than bacteria, producing a *less rapidly* fatal type of disease than that caused by the latter. These observations with regard to the differences in the contagiousness of these two diseases may not be without significance in the history of Surra.

It is very desirable that further inoculation experiments should be made, not only with blood containing the parasites, but with the parasites alone, obtained after cultivation, and, when an op-

portunity occurs, as frequently does in India, of trying similar inoculations with material obtained from this disease witnessed in man.

There is a vague impression regarding the subject of Anthrax Fever in the horse, that it is a malady from which recovery is nearly impossible. I think that nothing disproves this belief better than the observations recorded in practice itself, for nothing is more erroneous than to suppose that Anthrax is any more fatal in its effects than are other specific fevers. It is not nearly so fatal (as experience proves) as Surra seen in the lower animals; for, to quote a first impression of Mr. Steel, who witnessed an extensive outbreak of this disease in Burmah ponies, Surra may be characterised as an "*invariably fatal*" disease. Dr. Evans' experience was the same. He says,* "The records of the 4th Punjab Cavalry show that no case entered on the sick list for this disease has ever recovered. A few cases have made slow progress in the disease, alternately getting better and worse for over a year, *but they never recovered.*" It is, of course, an essential difference, but I am convinced that this difference is sufficiently marked in most instances to allow a ready diagnosis being made between the two diseases.

The extreme fatality peculiar to Surra which I have just described may be regarded as specially diagnostic of a typical outbreak; but in those cases in which the course is *indefinitely* prolonged—and which is a phase of Surra perhaps less characteristic than the former—parasites are also present, and it is noteworthy than in some of these at least the severe and dangerous symptoms seem to supervene of a sudden, and more rapidly than in those more acute in character in the beginning—evidently because in the one case the system is more weakened by the injurious effects of a long illness, than in other cases of a less prolonged nature. As a general rule, it may be stated that, if the mischief have not proceeded beyond the stage at which medicinal treatment has any effect, recovery is more likely to follow, in the milder cases, if proper treatment be adopted at an early stage of the disease, and the animals removed at once from the place in which they were located, and if they be supplied with water obtained from a fresh source.

Beri-Beri in man (*Lancet*, October 22, 1887) is probably the same disease as Surra in the lower animals. It is described as occurring under two forms—one which is marked by paralytic symptoms, the other in which a dropsical condition predominates, the same as in Surra seen in the lower animals. The *Lancet* recently published a full account of the malady which is known as Beri-Beri

* Evans, "Report on Surra Disease," 1880.

in many parts of this country, to which reference may be made for its peculiar characteristics, "the most constant and striking of which is the Progressive Anæmia." What medical experience and research have indicated, veterinary investigation appears to confirm, as may be observed on an inquiry into the history of Beri-Beri and Surra respectively. There is every reason to believe that, in a few years, important changes will be effected in the nomenclature of animal diseases which once seemed complicated or obscure. The importance of correct nosology in disease, it would be difficult to over-estimate, not only on account of its bearings on pathology, but because of the influence of treatment upon our animals, should the nature of the disease be not rightly understood.

We shall speak in future of one disease—Pernicious Anæmia: *Surra*, *Beri-Beri*, *Kákke*, or *Burmah Disease*, *South Wales Epizooty*, etc., being merely synonyms. Like Pernicious Anæmia in Europe, Surra has two forms. In the acute form it is *very fatal*, but in the milder and more chronic form recovery sometimes takes place.

The opinion which we ventured to put forward in our "Equine Diseases of India," published some months ago, regarding the pathology of Surra, that it would be found to be Pernicious Anæmia proves to have been correct. Now that we know something of the pathology of this great scourge of India, we may look forward to at least better results from our endeavours at treatment in the future than we have witnessed heretofore.

COCAINE.*

BY J. E. RAYEN, VETERINARY COLLEGE, TORONTO.

COCAINE is the name applied to a local anæsthetic concerning which, during the past year, numerous articles have appeared in various medical and veterinary journals; and if it proves as valuable as many who have used it are sanguine it will, it is truly a valuable addition to the list of materials used in operative surgery. It is obtained from the leaves of *Erythroxylon coca*, a shrub cultivated on the slopes of the cordilleras of Bolivia, Peru, and Columbia. They resemble the leaves of the tea, but have a slightly-visible curved line on either side of the prominent mid-rib. They are about two inches long, oval, oblong entire on the margin, usually blunt and emarginate, with a small apiculus in the notch at the apex.

* A Paper read by J. E. Rayen, veterinary student, Ontario Veterinary College, Toronto, Canada.

The leaves are thin and smooth, and have a bitter, aromatic taste. They contain a yellowish-white crystalline alkaloid—cocaina or cocaine—which has a bitterish taste, and crystallises in shining monoclinic prisms. It requires 704 parts of water to dissolve it; is freely soluble in alcohol and ether, and one in twenty respectively in melted vaseline and castor oil.

For the above description I am indebted to Gresswell's excellent little work on "Veterinary Pharmacology and Therapeutics."

Physiological and Medicinal Actions.—Coca-leaves have been much used by native Indians and others, travellers and miners, to appease hunger and thirst. It has been found that they enable a greater amount of fatigue to be borne with less nourishment, and lessen the difficulty of respiration in ascending mountain sides.

They are stimulant to the nervous and muscular systems, and prevent rapid waste of tissue.

The physiological action of coca and its alkaloids are summed up by Dr. Bennet as follows:—

1st. In small doses not ending fatally, cocaine causes partial loss of sensibility.

2nd. In doses which are subsequently fatal, it produces, prior to death, general loss of sensibility.

3rd. It destroys the excitability of the posterior columns of the cord, and paralyzes the entire system of peripheral sensory nerves, but the anterior columns and peripheral motor nerves remain intact.

4th. It induces spontaneous convulsions; but unlike those produced by strychnia, they are not excited by peripheral irritation, owing to paralysis of the sensory nerves.

5th. Special experiments prove that the nerve endings in the skin and mucous membranes were rendered inexcitable apart from any action the drug had upon the nerve centres.

Coca is believed to possess stimulant, restorative, or even nutritive properties, enabling persons who chew the leaf to undergo great muscular exertion with little or no fatigue. The pupils are dilated, respiration rises in frequency, is disturbed in rhythm, and finally ceases. The heart is greatly accelerated by paralysis of the vagus. The blood pressure first rises, and then falls. The muscles themselves remain unaffected. The amount of urea is said to be diminished, as if from diminished metabolism, but coca does not prolong the life of starved animals.

It has been used to prevent muscular exhaustion in wasting attended with increased formation of urea (Azoturia), in convalescence, in mental exhaustion, and in the opium habit; but in some of these uses it has somewhat disappointed expectation.

Neiman, as far back as 1860, wrote that cocaine produced temporary anæsthesia of the parts of the tongue with which it came in contact. But this interesting fact seems to have lain dormant for twenty-four years, until a few months ago Herr Koller was led to test the local anæsthetic action of the hydrochlorate of cocaine, on account of the effect he had witnessed when cocaine was pencilled upon the pharynx to render it less susceptible in laryngoscopic examination. Cocaine is a mydriatic; it slightly raises the temperature, and quickens the pulse and respirations. After Herr Koller's discovery, Dr. Brettaner, of Trieste, demonstrated its valuable anæsthetic properties on the eye, September 16th, 1884.

It was shown that when two drops of a two-per-cent. solution were placed on the cornea, and the application repeated after an interval of ten minutes; at the end of ten minutes more the sensibility of the cornea was so far diminished that it could be pressed with the probe, and the conjunctiva seized with fixation forceps without causing notable discomfort.

It has been shown that cocaine produces these effects not only on the throat and eye, but on the ear, tongue, nose, larynx, trachea, urethra, rectum, and even when absorbed by the unbroken skin.

The salts of cocaine are the hydrochlorate, citrate, and salicylate. Of these the hydrochlorate is most used. It appears as a white amorphous powder, which in reality consists of slender white needles, usually having a peculiar odour, more marked than that of the alkaloid itself, and its action is more intense than that of the alkaloid. Its greater solubility renders it more acceptable, as it is readily soluble in four parts of water, and freely soluble in spirit. It is an antiseptic; a five-per-cent. solution delays the putrefactive changes in an extract of meat.

As a local anæsthetic, I have assisted in using it in several cases—one in removal of the lateral cartilages, again in neurotomy. Ten minutes before the operation one-half dram of a four-per-cent. solution was injected as near as possible to the course of the internal and external plantar nerves, producing complete anæsthesia in both cases. In the case of neurotomy the nerve, after being exposed, could be completely crushed between the points of the dissecting forceps without the animal evincing pain. I have used it myself in two cases, in one for removing a small fibrous tumour from the eyelid, and in this case its action was highly satisfactory. I injected a few minims in several places around the base of the tumour, and after thoroughly washing the cutaneous surface over the tumour, painted it by means of a camel-hair brush with the solution, introducing at the same time several drops into the eye.

The skin was then cut and dissected back without the least symptom of pain. The tumour was then easily removed, playing on the cut surface meanwhile by a spray of the same solution.

I have used it in but one other case, that being a case of Conjunctivitis produced by the barbed glomerule of a grain of rye. The eye was terribly inflamed and sensitive. Although the operation could have been performed without the use of cocaine, as I had it handy I decided to use it. A spray was thrown upon the conjunctival membrane at intervals of several minutes.

In about ten minutes the barb was easily removed without the animal evincing the least pain, the complete absence of which greatly facilitated the operation.

One of the questions which naturally presents itself to the student is—Is the use of cocaine detrimental to the healing process?

Although different opinions have been expressed, the majority have been favourable. Among the cases which have been reported as resulting unfavourably several were for the removal of malignant tumours, where such a result might reasonably be expected. The others might possibly be traced to a scrofulous diathesis, or improper care. So far as my own experience goes, I have noticed no untoward results, the wounds apparently healing in a natural manner. Some operators have gone so far as to assert that it actually expedites the healing process.

The obstacle to the general use of cocaine is its great cost, but increased demand will certainly bring about increased production, and with this, it is to be hoped, a reduction in price. However, quality should not be sacrificed to mere cheapness; and as in so valuable an article the temptation to adulterate is great, the drug should be obtained only from reliable dealers.

Although cocaine will probably never replace the general anæsthetics in the major operations of surgery, I believe it is destined to be generally used in the minor operations. It increases both the safety and facility with which the operation can be performed, and either mitigates or completely removes the suffering of the animal, and it only remains for the members of the veterinary profession to demonstrate in a practice which affords every facility for experiment, the many purposes for which this valuable agent may be used.

EQUINE GLANDERS.

A RESUME OF FACTS AND OBSERVATIONS RELATIVE TO THE SAME.

BY F. C. MAHON, M.R.C.V.S., SOUTHSEA.

THIS important malady is essentially an equine affection, as in the horse we find its most extensive ravages, mortality, and propaga-

tion ; though, as is well known, the ass, mule, goat, etc., prove occasional victims, the ass particularly, when affected, presenting the typical lesions and diagnostic symptoms of the disease. The advent of the "Germ Theory" has placed Glanders on a level in importance with two other direful and extensive diseases, viz., Anthrax and Tuberculosis (Consumption) ; the former chiefly affecting the domesticated animals, and propagatable with fatal results to mankind ; the second affecting the domesticated animals also, and recently brought into due importance by its hitherto ill-suspected extent and fatality, now proven to be communicable from animal to man by milk and the ingestion of meat as food, provided the latter be only subjected to a minor degree of heat.

The doctrine of the spontaneous origin of Glanders has now happily but few votaries ; for no one can rationally deny, who has given much thought and had extensive experience, that the origin from the beginning of a potent poison—by recent discoveries and investigations—must now be relegated to the micro-organic world. This discovery, promulgated in 1882 by Weisering and Köch, started into new life the pathology of the disease, which is too rife, too important in many particulars to be lightly considered. That extraneous influences hold marked sway is not to be denied—faulty sanitary and hygienic arrangements, often found even in our day, though the diminution in loss has been wonderful since more correct principles of light, ventilation, and temperature have been in the ascendant. Soil, I maintain, proves a veritable nidus for propagation, and also that hot, dry seasons are causes aiding greatly in the mortality and virulency of the virus of Glanders. That there are exceptions no one can satisfactorily deny. Sea air, beneficial in many diseases, in the cases now to be considered had little or no effect. An outbreak of a serious and extensive character took place here so far back as April of last year, spreading and causing death, with enforced destruction, to the succeeding months of May, July, and August of the same year ; and where, contrary to warning, opinion, and experience, the owner refused to believe. The advent of a black mare, aged seven, a recent importation from Wales, proved the chief cause, though other imports into the remaining stables at the same period heightened the severity of the disease and produced further extension. That any but the mare were affected, observation counted for little, subsequent investigation and deductions much, in its elucidation. Two days after her arrival, on being put to work in a 'bus, she evinced unusual signs of fatigue, had a slight cough and did not eat with ordinary vigour. No nasal discharge ; slight exaltation of temperature ($100\frac{1}{2}^{\circ}$ Fah.) ; respirations 22, pulse 43. The average temperature continued the same for three

weeks, when a rise to 103° Fah., with other marked features in connection with the visible mucous membranes drew especial attention to her condition. A careful examination now revealed Glanders in a chronic and, as proved, an exceptionally occult form, but decided opinions were held as to its being Nasal Gleet, even Strangles; but both views were proved to be erroneous, as a *post-mortem* examination revealed a beautifully developed example of Glanders. That the peculiar range of temperature, few, but characteristically developed nasal lesions, marked plethora, good, occasionally a voracious appetite, no great discharge from either nostril, coat glossy, submaxillary glands *hard, knotty*, adherent to the rami of the inferior maxilla, and inclined centrally, gave rise to doubt among the few who were proved, but that we are too often deceived as to the nature of the malady is self-evident. No case at the Royal Veterinary College noticed by me, either in history or development, approached this one closely. Beyond stimulation to the submaxillary and parotid glands, and medicinal agents internally, as Syr. phosph. ferri et quinae, alternated with Ferri sulph. et nucis vomicae as powders, one daily, no further treatment was pursued. The owner being reluctant to have her destroyed, or to inoculate an ass with the nasal or other discharge, isolation was carried out more rigidly than before, she being removed a mile away from any others of the same stable.

There were remarked the advent, decline, subsequent renewal of the chancre-like ulcers, bluish discoloration around the veins of the septum nasi, yellowish-white agglutinated discharge, faintly green at early morn, œdema of the face, glassy appearance of the eyes, corded lymphatics of the facial region, mucous râle (tracheal), marked *bruit*, with second sound of the heart (with concomitant murmur), dull sound in patches over the left lung, increased in others, with general anæmic murmur of the right lung, increase of urine—watery, highly albuminous—glossiness of the coat more marked, increased appetite, which somewhat abated seven weeks after first noticeable symptoms and four days before slaughter took place. The development of the ulcers in the left nostril appeared periodically, usually every third day, remaining quiescent for a day or two, then becoming coated with glairy mucus, and greatly absorbed, to be followed on the original spot by others, larger, when two or more would coalesce.

The finger passed over the septum sunk into many pit-like depressions, which were, owing to the muco-albuminoid deposits, filled up, hence non-visible to the naked eye. The cartilage during life could not be found, as far as was visible, to be structurally much affected, but on *post-mortem* examination it proved to be involved in the upper region of the nose, and well-marked on the left side.

Callosities of fibroid tissue and specific cicatrices were noticeable. The average temperature of the horses in the same stable was about 100° Fah. In No. 2 stable an aged horse stood, which offered no visible external signs, with the exception, on the septum of the left nostril, of a well-raised, bluish-white cicatrix. He fed well, but the breathing was slow, anæmia well marked of the visible mucous membranes, temperature 102.3° Fah., corded lymphatics of the fore and hind limbs. He was destroyed and found to be affected with Chronic Glanders, lungs particularly showing Glanders nodules and infiltrations, and the lymphatics of extremities infiltrated. A peculiarity in connection with this stable was its subsequent freedom from the disease. In a black mare conjunctival cicatrices of both eyes, of a reddish-brown hue, were well marked. In no other case did this condition exist. Sections of the anterior maxillæ and femur revealed ulcerative patches and pit-like excavations. The trachea presented four ragged-edged, dark brown ulcers, one in its superior third, with infiltration of glottis, and an ulcerative patch—two centrally, and one near the division into the main bronchi, slightly inferior—that is on the base.

It appears evident that the life of the bacillus of Glanders is anærobic. The discharges from the nostril, which often contaminated and surrounded with *débris* from the fodder, denuded epithelial cells, pus, cartilage, "puccinia elements" also, in great measure prove protective; but by deposition on a soil suitable, with decomposition of the liquid portions, etc., the bacilli spores are set free, and oftentimes drying, become media for propagation and further imbibition.

The question of the extractive theory of bacterial life ought likewise to be here considered, the leucomanes and ptomaines: Do they exert any influence in the progress or retardation of the Glanders bacilli?

With the fixed infecting virus is attached or associated the specific local manifestations of disease: ulcers, tubercles, pus, blood, secretions, and probably excretions, and all the animal tissues which are permeated by blood or lymph. The volatile—the sweat and exhalations of the diseased—is feasible.

Experiments conducted by Renault and Bouley go far to prove that the incubatory period is shorter by inoculation, the infection of the virus being accomplished intravenously, and that the lungs are the chief seat of pathological changes.

Too often the lesions of Glanders are looked for methodically, as being in the lungs, nasal passages, and in the constitutional symptoms; but in many cases, and those which are not ordinary, primary lesions are met with in the lungs, trachea, and larynx,

the lesions of the nasal membrane being secondary or terminal, and in not a few no lesions have been discovered. Both these conditions were found in cases 1 and 2, respectively recorded. In the mare, from the commencement of the attack, the lungs appeared primarily involved, the callous condition, enucleation of the nodules (pulmonary), after death pointing closely to this being correct.

In No. 2 no one could have diagnosed Glanders, Farcy, or Glanders-Farcy; though some would, had they suspected Glanders, or Farcy, have paid marked attention to the solitary cicatrix of a whitish hue, in the left nostril of the gelding. Of the remainder affected and slaughtered, only one was a mare, and in a general summary, and proportionately, one mare to four horses may be the average deduction, though I have not seen any statistics on this score published. No vaginal discolorations existed in the mare, though in Anthrax and Tuberculosis in other animals a congested and anæmic appearance is very often met with. Hot seasons, dry particularly, combined with badly-ventilated, faultily-drained stables, where also much wood is employed in construction, are found fruitful auxiliaries in occurrence of the disease.

The virus of Glanders has been proved to be highly dangerous when in a desiccated condition, and the spores scattered broadcast by the wind alighting on a denuded surface, such as is caused by rubbing in Eczema and Pruritis, a fruitful source of development; add to this the use promiscuously of harness, clothing, grooming tools, even occasional admixture of forage, and the water supply, it is no wonder if these prove sources of contamination, any one of which overlooked may prove a flaw in its prevention.

The propagation by mediate or indirect contact is too often overlooked. Isolation is good, if only the attendants are limited to the charge of the isolated animals—not as here was the case, until perhaps too late, when mischief had been done.

(To be continued.)

A NEW OPERATION FOR THE CURE OF "PUMICED SOLE" IN HORSES, ARISING FROM LAMINITIS.

BY F. F. COLLINS, F.R.C.V.S., LATE PRINCIPAL VETERINARY SURGEON
TO H.M. FORCES IN INDIA, DUBLIN.

SEEING an article in THE VETERINARY JOURNAL for December, from the pen of the Professor of the A.V. School at Aldershot, upon the subject of the treatment of "side-bones" by means of isolating the

horn covering the diseased cartilages, has induced me to record my experience in the treatment of feet exhibiting convexity of the sole, or what is commonly recognised as "pumiced sole."

In the year 1870, when quartered in Dundalk, I was consulted by a Mr. Robson, agent to Lord Roden, relative to the crippled condition of once a very valuable four-year-old hunter, that had, by the abuse of a servant some time previously, suffered from Acute Laminitis, and when I saw the case it was one of veritable "pumiced sole." The question was what could be done to relieve the poor sufferer. The horse, if sound, would have been worth a high figure, but as he was, the knacker would have been a charitable consideration.

The owner left the animal for me to do whatever I liked in the matter. It then struck me that by removing the whole of the disintegrated horn, and throwing the weight of the horse on to his frog, sole, and such portion of crust as remained intact, a healthy growth of horn, with a healthy laminal attachment, would follow. Acting upon this belief, and preparing the owner for the many months' idleness necessary, I removed the horse to a shed in a good soft paddock, cast him, and removed the whole of the detached horn, which extended to the coronet at the toe, slanting downwards and backwards to within an inch of either heel.

Of course, the poor animal, when released, could scarcely stand, but his bed was made comfortable for him when disposed to lie down. I carefully examined the feet weekly to note results and watch the effects of nature's restorative powers, and I was pleased to find at the end of eleven months perfectly healthy feet existed. The horse was subsequently sold at a high price, and passed sound by an eminent veterinary surgeon. Since the above occurrence I have had two similar cases to treat, both terminating as the one recorded.

LOSSES AMONG EXPORTED HORSES ON BOARD SHIP AND ON LANDING.

BY R. J. DAWSON, VETERINARY SURGEON, SAN FRANCISCO,
CALIFORNIA.

ANY person having any knowledge of the exportation of horses, will admit that a large percentage die during their passage across the ocean. A number of my employers have, at different times, gone over to England for entire horses; more especially do I call to mind great losses to people of my acquaintance in Canada, who have gone from that country for that purpose.

It will, perhaps, be good policy to state, under a few headings,

what I consider the principal causes: 1. Condition of horses at time of embarkation; 2. Season—rough or smooth passage; 3. Medical and other treatment on board; 4. Altered conditions on landing; 5. Other systems adopted as to general treatment of stallions.

1. I can plainly trace the death of a number of horses to the fact that they have been fatted and prepared for the purpose of sale, to please the eye of the purchaser. Such animals are generally found in dealers' stables, fed upon soft food. They sometimes travel quite a long railway journey to the place of shipment. They prance along in high spirits, and when aboard appear in the best of vigour and general condition. But ere they have been on the ocean two or three days, it is very evident that their next journey will be the passage through the salt water to its bottom, to make food for the fishes.

2. It needs little general knowledge of atmospheric matters to understand that the summer is much the best time of the year to cross the Atlantic. If one is lucky enough to have an easy or smooth passage, it is very evident that it is so much the better for the horses.

3. Those who are entrusted with the care of animals on transit are very fond of loading themselves with medicines of all kinds, wonderful "cure alls" for every malady. It seems to me that horses are not troubled with sea-sickness as it is understood as affecting the human subject, but the lungs appear to me much more to sympathise; by far the majority of cases, to my knowledge, have died from inflammation of those organs.

4. In Canada and other cold countries, it is plain that one advantage in landing horses during the summer months is that they are undoubtedly better able to stand the intense heat of a Canadian summer than the cold during winter, and the somewhat gradual change from summer to winter is advantageous.

5. Through a lack of knowledge of the simplest laws of physiology, a large loss frequently occurs to the stock-owner. For instance, I have known Canadian farmers to buy stallions from English farmers, right off the plough, being accustomed to work regularly with the other horses. These same animals, when at their home in Canada, are shut up in a stable where they can get little or no exercise, being much over-fed, and seldom, if ever, exercised. Surely it requires very little reasoning to show the dullest mind that such an altered state of things is very liable to bring about dangerous consequences. A great number of cases of indigestion in stallions have come under my care, the result of the above mistake. Generally about three or four months after landing they give signs of Colic and indigestion. The hay is much

coarser than that in England, but this agrees remarkably well with the native horses, and does not disagree with imported mares. The quantity of grain (oats) given to horses in Canada is very great. Stallions, of course, are no exception to the rule. They have a recognised disease as a consequence of so much consumption of oats, termed "grain sick" or "burnt up." I will admit that when the thermometer is 30° F. below zero it is a hard matter to exercise a horse unaccustomed to the climate. But it is not always as low as that, and even when it is, I maintain that if the animal is adequately clothed, he is better at exercise than freezing himself almost to death in a small loose box. Horses are nursed and "babied" too much. I lay great stress on exercise, because I am certain that much of the trouble comes from a want of it. Some owners have large loose boxes, altogether plenty of room. But I am of opinion that the animals must be "exercised," as if left to themselves they do not take sufficient movement to digest their food and keep the blood in healthy circulation. I suppose this opens up the question as to whether it is the best policy to hack hunters during summer, or adopt the other system of "summering hunters." The two facts, viz., that stallions in this country, as a rule, are put to more mares during the season than in the old country, and secondly, that the summers being intensely hot, may have something to do with the production of so much more Colic in entire horses in Canada than elsewhere; it being an accepted practical fact that exhaustion has much to answer for in causing Colic. These are a few of the causes from which so many imported horses die; but I am doing my utmost to more thoroughly investigate the matter, and shall be pleased to send the results of my inquiries to THE VETERINARY JOURNAL.

ANTHRAX AND HORSE-SICKNESS.

BY H. THOMSON, M.R.C.V.S., ARMY VETERINARY DEPARTMENT,
CANTERBURY.

MR. NUNN's report on South African Horse-sickness induces me to offer a few remarks, which may not perhaps be without interest.

In the year 1882, after the conclusion of the operations in Egypt, and which resulted in our occupation of that country, many of our army horses, and especially those of the 19th Hussars, suffered from a particularly fatal disease, which I considered a form of Anthrax. The symptoms, *post-mortem* appearances, and large mortality, especially among those early attacked, all pointed strongly to such a conclusion. Moreover, some blood, mixed with aqueous humour, was sent to England for examination, and

in it were found Anthrax bacilli, although the animals inoculated with it died of septicaemia, owing to the changes which had taken place in the inoculating material during transit to England. Consequently this means of proof failed.

The mortality among the hussar horses was large—about eighty having died out of more than two hundred cases—I cannot give the precise numbers, as I write from memory. Nevertheless, among many which recovered from attacks of this disease, I do not remember a single instance of a second attack having occurred during the time I subsequently remained with the regiment alluded to, which was more than two years.

In 1884 a number of horses were drafted from the 19th Hussars to regiments in South Africa, and amongst those drafted must have been many that had had what I consider the Egyptian form of Anthrax, as no English remounts had been received by the regiment after its departure from England. Consequently I was much surprised to learn a short time ago that the horses drafted from the 19th Hussars to South Africa had since suffered considerably from Horse-sickness. As I had been under the impression that Horse-sickness was a form of Anthrax, I was greatly perplexed to account for such a state of things. It is generally accepted that one attack of the latter disease confers immunity from subsequent attacks; and that being so, either the Egyptian disease was not Anthrax, Horse-sickness is not Anthrax, the Anthrax of one country gives no protection against that of another country, or Anthrax gives no protection against Horse-sickness. I cannot believe that the Egyptian disease was not Anthrax, for the reasons above given. That Horse-sickness is not Anthrax, Mr. Nunn has fairly shown, though not conclusively demonstrated. We have no sufficient proof that the Anthrax of one country does not protect against that of another; and if my conclusion as to the nature of the sickness in Egypt is correct, then Anthrax gives no protection against Horse-sickness. It is of course quite possible that the horses mentioned may not have had the disease in Egypt (I mean those subsequently attacked with horse-sickness), but this I think hardly probable, as, although I have mentioned the number of cases as somewhat over two hundred, it was in reality much more, as scarcely a horse escaped an attack though many attacks were extremely mild.

I believe it has not yet been discovered for how long an attack of Anthrax or protective inoculation gives immunity from subsequent attacks; and as five years have elapsed since the 1882 outbreak, it is probable that very few of the drafted horses now remain in the service; and possibly the protection which they may have then derived has by this time worn itself out.

Editorial.

THE FIFTH INTERNATIONAL VETERINARY CONGRESS.

AT the fourth International Veterinary Congress held at Brussels in September, 1883, it was decided that the fifth Congress should meet at Paris. Acting on this decision, the veterinary profession in France is bestirring itself actively, and betimes, in order to prepare all the details necessary to ensure a brilliant success to the gathering in the French Capital. A committee has been formed, chiefly of Parisian veterinary surgeons and professors, with Dr. Chauveau as Vice-President; and it has been settled that the Congress will meet in September, 1889, the month being that in which teachers usually have their holiday, while the year will be auspicious as that in which the Universal Exhibition is to be held in Paris. On this occasion, the monument to the deceased Professor Bouley will be inaugurated at the Alfort School, and nothing, we may be certain, will be left undone to render the Congress one of the most useful and memorable of those yet held.

The Committee have issued a circular addressed to French and foreign Veterinarians, in which an appeal is made to them to aid in carrying out those measures which will guarantee success. In the circular sent to our French confreres, it is pointed out that France has been the cradle of veterinary science, and that from the French veterinary schools have been formed all those foreign schools in which scientific and practical veterinary knowledge has been disseminated. French veterinary surgeons are bound in honour to show that in this branch of human knowledge, as in all others, France has not fallen behind. The Brussels Congress was a brilliant success. That of Paris should not be inferior; therefore everyone is appealed to, without distinction of origin or situation—professors, functionaries or practitioners, civil or military—to unite, and show to the strangers a professional body advancing resolutely in search of the scientific solution of the great international questions which are in the domain of veterinary science. A hope is expressed in the circular that the French Government will grant a subvention to a Congress assembled to discuss momentous questions pertaining to international sanitary police.

Each member of the Congress will be asked to pay a sum of ten francs towards defraying the necessary expenses, but notice when the payment is to be made will be given hereafter. Each member will receive copies of all the publications issued by the Congress, post free. Those who wish to attend are requested to signify the same to M. Capon, 35, Rue de Babylone, Paris.

It is to be hoped that many members of the profession in this country will avail themselves of the invitation of their French brethren, and make the proposed Congress an unexampled success. Paris, at all times so attractive, will be unusually so in the autumn of next year, because of the Universal Exhibition, which promises to be of great dimensions and interest. The subjects to be discussed at the Congress are not yet published, but we shall keep our readers informed of the progress made in the arrangements. In the meantime, we would advise all those who purpose attending to send their names for registration to M. Capon, so as to afford the committee some idea of the numbers they will have to provide for, as well as to encourage them in getting through the heavy task they have to encounter before the Congress meets.

THE INFECTIOUS NATURE OF TETANUS.

In an editorial in the JOURNAL for last month, we referred to the somewhat novel views which are now being expressed with regard to the communicability of Tetanus, and gave instances which seemed to prove this hitherto unrecognised feature of the disease. In the *Lyon Medical*, Dr. Audry has a paper on the subject, which gives more details and evidence than were available when we penned our article, and which additional information may prove of interest to our readers.

In his paper Dr. Audry does not venture to give a history of the theories as to the pathogenesis of Tetanus, as this had already been done in many treatises, and especially the great dictionaries of Dechambre and Jaccomed, and Mathieu and Poncet; but confines himself to a *resumé* of the notions and new facts promulgated during the present scientific era, and related to the conception of Tetanus as an infectious microbic malady. Ozenne (*Archiv de Méd.*, 1884), Raymond (*Gazette Medicale*, 1886), and others had already traced this course, and Audry avails himself of their labours.

The idea as to the infectiousness of Tetanus arises from two orders of facts relating (1) To clinical observation on mankind and animals; (2) To bacteriological technique.

1. Benjamin Travers appears to have been the first to clearly formulate an affirmation as to the infectious nature of Tetanus, though, long before, facts were observed which might have led to such a presumption. Ambrose Paré believed that the improper dressing of wounds was one of the causes of its appearance. Bájon had remarked that the cases of Trismus of new-born children, so frequent in Guyane (France), were considerably diminished when the wound, due to the sloughing of the umbilical cord, was kept clean.

During the Seven Years' War there were several of those terrible and vast epidemics of the disease, one of which, in a single night, attacked no fewer than 4,000 of those wounded at the Battle of Prague. Larrey also witnessed them in Egypt and elsewhere—especially after the Battle of Bautzen in Saxony. Since then they have been noted in the Crimea and at Metz.

Nevertheless, Lister has never seen Tetanus develop in those upon whom he has operated since he adopted his antiseptic treatment; and Cooner in England, Bilbroth in Vienna, and Socin in Switzerland, willingly admit, with Lister, the probable microbial nature of the malady. Facts multiply in this direction. In Denmark, the cases of Trismus which ravaged a maternity hospital disappeared with the introduction of antisepsis. In the service of M. Magnien, at the St. Etienne Hospital, the number of cases of Tetanus

were diminished eighty per cent. by the same influence. At the same time attention was fixed on a crowd of facts which assumed a new significance. M. M. Saint-Germain and Polaillon witnessed, in their practice, a series of cases which occurred unexpectedly, and without any external and appreciable signs, at St. Etienne, all the amputations—four in number—performed in the practice of M. Riemboult during four years were followed by Tetanus, and M. Verneuil did not hesitate in attributing their origin to the employment of non-disinfected instruments.

M. Larger describes the epidemic at Carrière-sous-Poissy, and cites the fact of two wounded labourers, lodged in the same place, becoming affected with Tetanus at an interval of eleven years from each other.

At the Surgical Congress, M. Thiriar, of Brussels, referred to an epidemic in which eight cases occurred around Nivelles, not including four appearing after the operation of ovariectomy. H. Blanc, of Bombay, adopted the view that Tetanus was transmissible, and thought water was the vehicle of the poison.

Some weeks subsequently, M. Larger related the history of three cases occurring simultaneously at the Colmar Hospital.

Finally, Verneuil and Larger, calling to their aid the information the veterinary art could furnish them, concluded that animal Tetanus was contagious, and indicated the possibility of its transmission to man.

M. Cagnat, having castrated, consecutively, six horses with the same écraseur, found that all of them died of Tetanus; the instrument having been cleansed, there were no more deaths. M. Langevin, stated that, in 1848, Veterinary Surgeon Huvelier lost from Tetanus thirteen of fifteen horses which he had operated upon simultaneously; and M. Bounian mentioned that of six bulls which he had castrated at the same time, five had Tetanus. M. Thierry castrated fourteen lambs, and twelve succumbed, while thirteen operated upon at the same time by another veterinary surgeon recovered. On inquiry it was found that five months before, a horse died of Tetanus ten or twelve yards from the place where Thierry's newly-castrated lambs were lodged.

In 1870 M. Anger saw a dog become tetanic where there was a horse suffering from the disease.

In 1885 Larger gives the case of a woman dying of Tetanus, who lived near a stable in which there was a horse affected with the disease. MM. Kermisson, Bouilly, and Hirtz observed the complication in people who were wounded by horses (wounds on the head, bites, etc.); and Verneuil even makes himself the apostle of the theory as to the equine origin of human Tetanus.

On the other hand, however, M. Saucerotte, of Luneville, draws attention to the rarity of Tetanus among the cavalry at that place; and M. Terrier thought that the facts were not yet sufficiently numerous or probable, that they could be looked upon as absolutely affirmative; M. Larger himself replying that, in his opinion, the transmissibility of equine Tetanus to man was as yet only probable.

While the French clinicians were collecting facts, the experimentalists were not inactive. In 1868, Rose failed to produce Tetanus by inoculation; Arloing and Tripier also were unsuccessful, though they employed blood and pus; while Nocard, Antonelli, and Cocco were no more fortunate.

In 1883 the problem was advanced an important step, MM. Carl and Rattone having succeeded for the first time in producing the disease by inoculation. A man died from the malady, which was due to an acne pustule on his neck. Carl and Rattone excised the tissues of the pustule, and, examining them in an emulsion, saw cocci and bacilli in them—a discovery which had only a minimum value; but intra-sciatic, intra-muscular, and

intra-vertebral inoculation with their dilution produced Trismus and Opisthotonos in eleven of twelve rabbits experimented upon. Bizzozero and Berruti obtained analogous results, but failed when employing blood. In 1884 Nicolaïer, one of Flügge's pupils, discovered in vegetable soil a microbe which, when injected into the guinea-pig, produced a tetaniform affection transmissible by inoculation; the muscular spasms commencing in the inoculated limb, soon became generalised. This microbe was a long bacillus, particularly abundant in the pus formed at the seat of inoculation. But Nicolaïer failed in his attempts to isolate it in pure cultures, although his series continue to be toxical.

Lastly, Rosenbach, employing fluids obtained from a person affected with Tetanus, consecutive upon frost-bite of his feet, succeeded in isolating a bacillus which he could grow in a pure state, and in indefinite series, while retaining its power of producing Tetanus in animals inoculated with it.

It would appear that in Germany it is generally admitted that Rosenbach's bacillus is really the microbe of Tetanus. It is from its cultivations that Brieger has obtained the materials necessary for his researches, which will be referred to presently.

Of course, it was not to be expected that identical results would be obtained everywhere else. Doyen, in France, found cocci in similar investigations. In Italy, Ferrari got some blood from a patient suffering from Tetanus following ovariectomy. Cultivations made in agar and on gelatine yielded colonies of cocci, the intra-medullary and subcutaneous injection of which induced Tetanus in rabbits.

On his side, Bonome saw, in a patient suffering from fracture of the spine, Tetanus arise from bed-sores. He took from the neighbourhood of these sores some pus, and, inoculating rabbits with it, in a few hours these were tetanic. Cultivations made with the fluids infiltrated at the points of inoculation yielded cocci and bacilli which he could not isolate.

As will be noted, unanimity does not prevail on the question. Ferrari believes the microbe to be a staphylococcus, Rosenbach a bacillus. But the great experience of the last-named investigator, and the curious experiments of Brieger, tends to the belief that truth is on the side of the German.

Brieger worked with broth inoculated with the bacilli of Rosenbach, and succeeded in isolating the four "toxins" or ptomaines as follows:—

1. Tetanin, easily decomposable by acids, but inattackable by alkalies. Injected in doses of a few milligrammes, it causes death, with tetaniform manifestations.
2. Tetanoxin, producing tremblings, paralysis, and cramps.
3. An unnamed substance which produces Tetanus and causes great increase in the lachrymal and salivary secretions.
4. Spasmodoxin, which kills animals with tonic and clonic convulsions.

In decomposed cultures these substances are not found. Here are, then, if we are to believe the Berlin chemist, four new isolated bodies, veritable ptomaines, resulting from the vegetating of the bacilli of Tetanus, and reproducing the symptoms of that malady.

If these results are incontestable—and they can only be so by people of altogether special competence—it is certain that a great advance has been made in microbio-chemistry. Nevertheless, it is not permissible to accept as quite demonstrated at present the absolute value of Rosenbach's bacillus. The extreme difficulty with which it can be cultivated—a difficulty so great that bacteriologists of the greatest competency have failed in their attempts, and no one has been able to categorically control Rosenbach's results—may cause us to hesitate in affirming the question, although it may be possible to admit as very probable the infectious and transmissible nature of Tetanus.

NOTES ON ANTISEPTIC SURGERY IN THE AUSTRIAN AND GERMAN VETERINARY SCHOOLS.*

BY DR. HUTYRA, PROFESSOR OF ANATOMY AND PATHOLOGY, VETERINARY SCHOOL, BUDA-PESTH.

FOR some time past at the veterinary school at Vienna and other schools in Germany, antiseptic surgery has been practised and carried out as nearly as possible on the same lines that have given such good results with human beings.

In the large animals that are our patients, complete Listerism cannot be carried out, the spray and the various complicated dressings employed by the celebrated Edinburgh professor, not being practical in veterinary surgery. Nevertheless, it is not absolutely necessary to carry out to the letter the various complicated methods advocated by Lister, to obtain good results, and great advantage can be obtained by much simpler procedure, in which the essential principles of Lister's methods have not been lost sight of. Antiseptic dressings are not only used in the veterinary schools, and by practitioners in large towns, but by many in remote country places, and owing to the extremely low cost, there is every probability of their use becoming more general, and simple antiseptic dressings that can be applied by any one are generally sufficient to bring about healthy healing action with little or no suppuration in cases of severe injury, which, without these precautions, would heal but slowly, and even then in an unsatisfactory manner. Bacteriological research has been the chief factor in modern modifications of Listerism, certain drugs and substances which were formerly supposed to be endowed with antiseptic properties, having been proved to have in reality but a very slight action on micro-organisms. According to Koch, corrosive sublimate, permanganate of potash, chlorine water, and solution of iodine, are the most active of the parasitocides. Carbolic acid in a concentrated aqueous solution of 3 to 5 per cent. is a good antiseptic; but in oil or alcohol it loses part of its activity. Gartner and Plagge have made a number of researches into the antiseptic properties of a number of drugs which, from a surgical point of view, are of the highest value. Cultures of various bacteria were brought in contact for from fifty-eight to sixty seconds, with various antiseptic solutions, and their vitality proved by making inoculations on to gelatine or gelatine and peptone. These authors have found that corrosive sublimate 1 to 1,000, and carbolic acid 3 per 100 in an aqueous solution, killed these bacteria in 8 seconds. A 2 per 100 solution of carbolic acid did not kill most of them until after 30 to 45 seconds, and with a 1 per 100 solution results were very incomplete and uncertain.

The conclusions that Gartner and Plagge drew from their experiments are that a 3 per cent. solution of carbolic acid, or a $\frac{1}{10}$ per cent. solution of corrosive sublimate, is for all practical purposes sufficient to disinfect the hands of the operator, instruments, wounds, and the region about to be operated upon, and that in about twenty seconds they will destroy septic or putrefactive micro-organisms.

Heyn and Rovsing, of Copenhagen, have made a series of researches into the toxic effect of iodoform on the micro-organisms commonly found in wounds, and they have found that certain of them, more especially the "*Staphylococcus pyogenus aureus*," will retain their vitality for a month in iodoform powder.

Bassowski, in fifty cases, in which he examined the material collected from iodoform dressings, only found ten free from micro-organisms. In twenty-six he found the *Staphylococcus pyogenus albus*; nine, the *Staphylococcus*

* Translated by J. A. Nunn, Army Veterinary Department, F.R.C.V.S., F.R.G.S., Cape Colony.

pyogenus aureus; two, the *Staphylococcus pyogenus*; and in three other cases other organisms. Volkmann, of Halle, confirms these observations. Bassowski furthermore states the curious fact, that the *Staphylococcus pyogenus albus* is no hindrance to the healing of wounds by first intention. These experiments, however, do not disprove the great antiseptic value of iodoform, which, by setting free iodine, destroys micro-organisms, although, perhaps, not so rapidly as other drugs, and which in animals, as in man, has the great advantages of drying up wounds and allaying pain.

Corrosive sublimate is usually employed in a solution of $\frac{1}{10}$ per cent., the following formula being recommended by Vogel, of Stuttgart: 1 gramme each of corrosive sublimate and common salt to a litre of water, the salt being used to cause perfect solution of the corrosive sublimate; and he has obtained good results in affections of the uterus of a septic or putrid nature with a $\frac{1}{20}$ per cent. solution.

In cases of operations on the hoof, Dr. Hutyra puts the foot the day before into a bath of corrosive sublimate solution, and during the night keeps it well covered up with bandages thoroughly saturated with it. The animal is thrown on a bed of fresh straw covered with a clean cloth, or some impermeable material. At Berlin and Munich a large leather cushion is used, that is thoroughly cleaned and disinfected after every operation. That used at Berlin is about 20 centimetres thick, and by a system of pulleys can be raised and lowered at pleasure.

At Munich the floor of the operating room is a rectangle of asphalte, 3 metres long by 2 wide, dipping down in the centre, where there is a hole connected with a discharge pipe to carry blood and other fluids; the rest of the floor is covered with cork. One corner of the asphalted rectangle is furnished with a pipe and a tap, from which a powerful jet of water can be obtained at any time during the operation. The patient is cast on the cork floor, where minor operations are performed; but if there is any great amount of hæmorrhage he is removed to the asphalte.

Professor Frohner, of the Berlin Veterinary School, operates on small animals on a table with a double top, the upper one of perforated zinc, which allows blood and fluids to run through it on to the lower one, where they are collected in a receiver.

At Munich, for dogs a table is used furnished with a square bag, in which the dog is placed, and the anæsthetic is administered. The table is then carried into the operating theatre, the cover removed, and the operation performed. When the patient is properly secured, the hair on the region of the body where the operation is to be performed is cut, the skin washed with soap and water and a brush, and the antiseptic, "either corrosive sublimate $\frac{1}{10}$, or carbolic acid 3 per cent." applied freely, and in the case of the foot the hoof is carefully dried. Everything likely to come into contact with the wound is carefully disinfected, such as the hands of the operator, instruments, etc., with one or other of these antiseptic solutions, the instruments being kept in it during the whole operation. Professor Bayer, of Vienna, uses a small table on short legs, that has three square metal divisions on it of different depths, in which instruments can be placed in different antiseptic solutions. Sponges are used for cleaning wounds during the operation. The sand is removed from them by beating; they are then washed in warm water until it remains quite clean and uncoloured; they are then put into a 5 per cent. solution of carbolic acid, which is changed every second day for eight days; then boiled for a quarter of an hour in a solution of bicarbonate of soda, and then kept in a 5 per cent. solution of carbolic acid until required for use. Bayer recommends an 8 per cent. solution of chloride of zinc if there is any dead tissue in the wound. If sutures are necessary, catgut is preferred, disinfected in the same manner as sponges, and they are kept till

required in a 5 per cent. solution of carbolic acid and olive oil. If the wound is superficial he powders it over with iodoform.

In operations on the foot, Dr. Hutyra at once dresses it with a thick pad of sterilized tow and any of the above-mentioned disinfectants. He takes the temperature carefully, and if surgical fever does not manifest itself, he does not disturb the dressing, leaving it on if necessary for several weeks; he strongly insists, however, on renewing it if the temperature rises one degree Centigrade. This system is carrying into practice the well-known method that is now in vogue with all workers in bacteriology, of plugging culture tubes with sterilized cotton wool.

TREATMENT OF TRAUMATIC ERYSIPELAS BY RESORCIN.

RESORCIN may be employed in Erysipelas under three different forms, viz.: as subcutaneous injections, lotions, and ointments. The last mode, experimented on by Andeer, Cattani, Moncorvo, Unna, and many others, is preferable to the solutions. These produce an astringent effect on the tissues. As to the subcutaneous inoculations, they give uncertain results; and if one employs concentrated solutions, disagreeable cicatrices are the result. In a case under notice, a mare, seven years old, presented marked Erysipelas of the back of the near hind limb, the result of a kick. The skin was inflamed and tender to the touch. In many points excoriations were present, some of which were covered by crusts, others were humid and suppurating. The animal avoided bringing the foot to the ground. The excoriated parts were washed, and resorcin ointment was applied to them (resorcin sublimate and hog's-lard, of each equal parts). Next day there was a noticeable amelioration. The applications were renewed, and on the fourth day there was noticed a sensible amelioration. The crusts had detached themselves from excoriated points. On the fifth and seventh days, friction was applied and a bandage put on. A complete cure was effected in thirty-five days. Two following observations are analogous to the first (*Recueil de Med. Veterinaire*, 15th January, 1887).

(b) COCAINE IN THE REMOVAL OF VESICAL CALCULI.

A gelding, seven years old, presented the following symptoms: Micturition difficult, with intermittent and violent tenesmus, Colic, urine charged with mucus and blood-coagulæ; the presence of a vesical calculus was suspected and confirmed by rectal examination. The principal point of interest in this case consists in the employment of cocaine with local anesthetics for avoiding the dangers of the operation of incision of the urethra. A solution of cocaine, 4 to 100 parts, was injected under the skin to the level of the ischial arch, and the patient was left in a standing position. The incision was practicable without the animal manifesting any pain. These calculi are extracted without any difficulty by the aid of the forceps in small animals. (*Recueil*, September 15th, 1886.)

(c) VALDIVINE

is the active principle of *Simalba valdivia* of Colombo. It is very soluble in water (1 to 600), soluble in alcohol (1 to 70), less soluble in absolute alcohol (1 to 90). M. Nocard has experimented with the toxic action, physiological and therapeutic, of valdivine: he finds its narcotic and toxic properties most pronounced in doses of 2-4 milligrammes. In the dog it has been found rapidly to reduce the temperature, and is also useful in allaying tumultuous action of the heart. M. Nocard has tried subcutaneous injections of this agent in Rabies in the dog. (*Recueil*, September 30th, 1886.)

SOME OF THE INFECTIOUS DISEASES COMMON TO MAN
AND THE LOWER ANIMALS.

BY E. KLEIN, M.D., F.R.S.

THE following is a brief abstract of the more interesting portions of a paper read at the Epidemiological Society of London, on December 14th:—

Jenner's views as to the relation of human Variola and Cow-pox are so well-known that it is unnecessary for me to enter into them, and likewise Ceely's classical paper in the "Transactions of the Provincial Medical and Surgical Society," and Dr. Badcock's results have more than once been discussed and commented upon. Ceely, by direct inoculation of human Variola into heifers, has succeeded in two instances in producing vesicles identical with those of the natural Cow-pox, and in transmitting the lymph from them into generations of human beings as Vaccinia; he has thus proved that Vaccinia is a modified human Variola, having obtained this modification by its passage through the cow. Now, it is known that the French Commission under Chauveau arrived at a different conclusion. They were unable to produce such a result as Ceely did by inoculating calves and heifers with human Variola; in some instances they assert to have produced a papular eruption at the seat of inoculation; the matter of such papules when inoculated into human beings produced, again, Variola. They concluded from these experiments that human Variola is transmissible to the bovine species as Variola, but does not produce Vaccinia. That this conclusion does not necessarily follow from the experiments of the French Commission has been very ably argued by the late Dr. Seaton and others. All that can be said of the work of the French Commission is that their attempts to produce Vaccinia by means of human Variola were negative. I can fully appreciate these negative results, because some years ago I have myself had opportunity, under the late Dr. Seaton, and under the late Mr. Ceely, to make such inoculations on a large scale. Over thirty milch cows and heifers had been inoculated with lymph of human Variola; fluid condition and dried on points, taken from cases of confluent Small-pox in different stages; clear lymph, purelent lymph, and crusts. Every animal was inoculated in from six to twelve places, each place being made up of a number of simple or crossed incisions about half an inch or more, and a large quantity of lymph was rubbed into each place of inoculation. Many of the animals were thus repeatedly inoculated. But in no instance was there produced a vesicle, or anything comparable to a Cow-pock. We concluded from these experiments that to obtain a positive result an unknown additional condition is required, which was absent in our experiments. I am afraid that as long as the present uncertainty as to the exact nature of the virus of Vaccinia and Variola remains, no clear experimental proof will be obtainable, unless it be that a different method of experimentation with Variola lymph is employed than has hitherto been followed. As regards the first—*i.e.*, the nature of the virus—various assertions have been made from time to time, without, however, bringing us much nearer to the exact understanding. F. Cohn has, many years ago, ascertained the presence of micrococcus of the character of streptococcus in the lymph of Variola and Vaccinia; Sanderson confirmed this; Weigert found micrococci in the lymph of the vesicles and lymphatics of the Variola eruption; Pohl Pineas described them also in the tissue of the epidermis of Vaccinia. Dr. Paul Guttman isolated, by cultivation after the modern methods, three different varieties of micrococci from the lymph of Vaccinia and Variola; so did also Dr. Buist. I show you here a streptococcus which is constantly present in human Vaccinia, which corresponds to one of the streptococci isolated by Guttman, and which he regards as the Vaccinia streptococcus. Quite recently it has been, however, maintained that none

of the species of micrococci hitherto isolated by the gelatine method can be the virus of Vaccinia, but that it probably is some other organism not capable of growing in gelatine. The fact of the matter is, no one has yet succeeded in making a successful inoculation experiment with any of the organisms isolated from either Variola or Vaccinia. In saying this I am quite aware of the assertions of Dr. Buist, who claims to have succeeded in this; but reading his statements, and comparing them with his experiments, I think you will agree with me that they do not carry a great amount of conviction.

[The subjects of *Hydrophobia* and *Diphtheria* were discussed by Dr. Klein, who then proceeded to the consideration of *Scarlet Fever*. He said that it would, no doubt, be in the recollection of the Society that at the end of 1885 and the beginning of 1886 an extensive outbreak of Scarlet Fever occurred in Marylebone, which Mr. Wynter Blyth has traced to be due to consumption of milk coming from a particular farm at Hendon. Mr. Power supplemented this by finding that cases of Scarlet Fever occurring also in other districts of the metropolis were likewise to be referred to the milk of the same farm. With Dr. Cameron, medical officer of health of the Hendon district, Mr. Power was able to exclude all and every accidental contamination of the milk of this farm from human source. Mr. Power had further shown "that only certain sections of the milk supplies within the farm, and eventually certain cows, as having to do with the infectivity of the milk."] The report of Mr. Power is known to you, and I think you will agree with me that in reading it, and following from step to step the clear and precise observations of Mr. Power, we cannot refuse admitting the correctness of his conclusions. It is not my object or my place to defend Mr. Power's conclusions—he is quite capable of doing so himself; but I will undertake to say this, that to an unbiased reader the methods by which he arrived at those conclusions are unimpeachable, and the proof amounts almost to a mathematical demonstration.... A point that our opponents have brought forward refers to a disease in the cow which, it is alleged, is the same, and has the same origin, as the Hendon disease, but has not produced infection of human beings with Scarlatina. Now, let me first remind you what the conditions of the Hendon disease were. I will quote the concise summary given by the medical officer of the Local Government Board, in his report of 1885-1886, pp. vi. and vii.: "In the end," says the medical officer, "he (Mr. Power) has demonstrated beyond reasonable doubt the dependence of the milk-Scarlatina of December on a diseased condition of certain milch cows at the farm; a condition first introduced there in the previous month by some animals newly arrived from Derbyshire; and he finds strong circumstantial evidence for believing that the later phenomena of this dependence were brought about through the extension of the diseased condition of one set of animals to another set, after the fashion of an infection." This disease in the Hendon cows manifested itself in the following symptoms: * ulcerations covered with scabs on the teats and udder, ulceration, scabs, scurfiness, and loss of hair in patches in different parts of the skin; the animals were thin, and exhibited slight cough, but showed no rise of temperature. The viscera of two animals killed, showed: slight pleuritis, with recent fibrinous deposits and adhesions; congestion and extravasations of blood in many lobules of the lungs; discoloured softened patches in the liver tissue; ecchymoses and petechiæ in the tissue and in the capsule of the spleen; swelling of, and extravasations of blood in, the lymphatic glands; congestion and glomerulonephritis of the cortex of the kidney; in some, also, interstitial new growth.

* The description given by Dr. Cameron of the Hendon disease is admittedly and, to a large extent, based on various statements by different persons, who in previous years, and at different localities, maintain to have observed a disease in cows similar to the Hendon disease.

With the material of the ulcers the disease was reproduced in the skin of calves; from the tissue of the ulcers of the Hendon cow an organism was isolated by cultivation, of which the characters in the depth and on the surface of gelatine, on agar-agar mixture, in broth, milk, and on blood-serum, were minutely studied, and hereby its identification became possible. This streptococcus, when inoculated into calves, produced a visceral and sometimes cutaneous disease, mild in character, and which very much resembled that of the Hendon cows. With this organism, by feeling or inoculation, a disease ending fatally in a large percentage was produced in gray house-mice; from the heart's blood of these the same micrococcus was recovered by cultivation. Professor Axe has presented a report to the Agricultural Department of the Privy Council Office, in which he states that in two different localities cows had been affected with ulceration of the teats and udders, and that the disease had been introduced at the same time into these localities by infected cows coming from the same dealer in Derbyshire that had supplied those incriminated first cows to the Hendon farm, but in those two localities no Scarlet Fever had been produced amongst the consumers of the milk. Now, let me here say that this dealer in cows in Derbyshire had at first stoutly refused any and every information to Mr. Power; but some months afterwards, when this investigation at the Hendon farm had to a great extent implicated the stock of this Derbyshire dealer, he had altered his mind, and offered all the above information. It would seem, in such a case, that some corroboration of the statements and observations of the Derbyshire cow-dealer should have been forthcoming. I do not question for a moment that Professor Axe had correctly reported what he heard and saw as to the ulceration of the teats and udders in the two herds, and that he had been told and had observed that the disease spread in each herd, and that it was introduced there by cows coming from the dealer in Derbyshire above mentioned; but what I should like to be permitted to question is the reliance that ought to be placed on the information offered by the above Derbyshire dealer—*i.e.*, whether about the same time and from the same stock that he supplied cows to the Hendon farm he also supplied those two other localities. That the disease observed in these two localities is the same as that at the Hendon farm there is no evidence whatever; sores and ulcers on the teats and udders of cows of an infectious character are known in veterinary pathology, and they are known to be of various kinds. In connection with this I will mention one striking coincidence that refers to this Derbyshire dealer. It will be, no doubt, in your recollection that an extensive outbreak of Scarlet Fever occurred at and about Wimbledon at the end of the last and the beginning of this year. This epidemic was traced distinctly to milk coming from a particular farm. Now, the curious thing about this farm is that it belongs to a dairy farmer of the name of Keevil, who happens to be the brother of our Derbyshire dealer, and who had received some of his cows from this same dealer shortly before the outbreak of Scarlet Fever in Wimbledon. The way this Wimbledon milk had received the contagium has not been ascertained by Mr. Power, but the fact that the Wimbledon dairy farmer, Keevil, had got cows from the Derbyshire dealer, Keevil, who had supplied the Hendon farm, is, I think, extremely suggestive. Owing to the kindness of Professor Brown, I have been enabled quite recently to observe a cow which belonged to a herd in which a contagious ulcerative disease of the teats and udders prevailed, which was supposed to be the same as that of the Hendon cows. No cases of Scarlet Fever have been known in connection with these cows. The ulcers on the teats were very extensive, superficial, irregular, and covered with brown crusts, the teats themselves much swollen. Taking off the crusts and scraping the superficial part of the ulcers, and then taking material from the deeper part of the ulcer and inocu-

lating gelatine, I succeeded in isolating four different species of micrococci—(a) *micrococcus citreus*; (b) *micrococcus aurantiacus*; (c) *staphylococcus pyogenes*; (d) a *micrococcus*, which in plate cultivation, on the surface and in the depth of gelatine, presented characters resembling the *micrococcus Scarlatinæ*, obtained from the Hendon cows and from human Scarlet Fever. But it soon became apparent that it is an altogether different species; it grew much more slowly, and its colonies (minute circular dots) are much more transparent than those of the Hendon cow organism; further, while the *micrococcus* of the Hendon cow and of human Scarlet Fever grows well in broth, producing after two days at 35° C. a distinct turbidity, and also well on the surface of agar-agar mixture, as isolated whitish dots; the *micrococcus* in question isolated from the ulcer of Professor Brown's cow does not show any growth on agar-agar mixture, or in broth, even after a five days' sojourn in the incubator at 35° C. The animal in question was killed after about a fortnight, when the ulceration and swelling of the teats were still considerable. The left hind-quarter of the udder was found very tense, and greatly swollen; on incision, a large quantity of thick, grumous pus was found in this portion. The lungs were normal, the spleen was normal, the liver exhibited a few whitish irregular spots, and the kidney presented a few fatty patches on the surface of the cortex; none of the lymphatic glands showed the hæmorrhage into their substance. During life the animal had, all the time while under observation, high temperature, varying between 105° and 104° F.; and no wonder, seeing the extensive suppuration that was going on in the udder. There can, then, be no question that this cow did not show the same disease that was observed in the Hendon cows, nor was the same organism obtained. Two others cows were kindly given me by Professor Brown, and also in these the same condition was present and the same result was obtained by culture and in the *post-mortem* examination.

The last point of opposition urged is that of the so-called *bacillus Scarlatinæ* of Edinburgh. Dr. Edington has isolated from the epidermis during the stage of desquamation of Scarlet Fever cases a *bacillus* which he considered to be the *bacillus* of *Scarlatina*. He maintained that this *bacillus* is present in all cases of Scarlet Fever in the blood before the third day; it then disappears from the blood in order to appear in the skin, whence it is discharged into the epidermis, and here forms spores during the stage of desquamation. In the first place, let me remind you that various species of bacilli and micrococci have been hitherto isolated from the epidermis of the normal skin. In the second place this *bacillus* of Edington has not been found in all early cases of Scarlet Fever by a committee of the Medico-Chirurgical Society of Edinburgh, appointed to test Dr. Edington's assertion, only in the blood taken from a prick in the finger of two out of ten cases of Scarlet Fever on or before the third day. Anyone acquainted with the modern methods of bacteriological inquiries will agree with me when I say that there is no difficulty whatever for anyone who devotes the necessary time to it to isolate by the modern exact methods new species of bacilli or bacteria in any material he chooses to select. . . . The point, therefore, in the present state of bacteriological researches is not whether in any morbid material of the body this or that new species is present, but whether in its distribution and its action it bears any definite relation to that morbid process. Now, everyone acquainted with these fundamental conditions will understand that one of the first and essential conditions would be that a microbe which is to bear any relation to Scarlet Fever must be found in the blood or tissues in a definite distribution. Examining the desquamating epidermis and finding a new species of bacteria may mean nothing more than this—viz., that to those several species already known to exist in the epidermis, another species has been added, which, in itself, is no doubt an

interesting discovery, as much as, for instance, is a new species of diatome or a new beetle in a locality where no one has seen it before. But this new addition to the list of bacilli in the epidermis may have nothing whatever to do with Scarlet Fever. This so-called bacillus of *Scarlatina* is a bacillus which belongs to a well-defined group of species which in former years would have been considered as *bacillus subtilis*—viz., rods of a certain length and thickness, mobile; they have a tendency to form long chains or leptothrix; they grow rapidly in broth, and form here on the surface a scum, which is already well developed after twenty-four hours; the scum thickens during the next days, and becomes corrugated, the fluid itself remaining clear, but gradually becomes brownish—the more brown the longer time elapses; they liquefy rapidly gelatine, and after some days form also here a scum on the surface; they form in a few days a corrugated scum on the surface of solid agar-agar mixture; they grow rapidly in milk which is curdled, and by which a white precipitate is formed, while the fluid, at first turbid, gradually becomes clear; on its surface there is a thick pellicle. In plate cultivations in gelatine, the bacilli form minute whitish colonies, at first—i.e., during the first day angular, after thirty hours or more gradually liquefying the gelatine, and forming circular colonies of liquefied gelatine with an opaque or slightly granular outline, and a central, whitish spot due to precipitate of masses of bacilli. On potato they grow rapidly, and form a more or less corrugated layer, gradually turning brownish. Now I know of five different species; all notoriously septic bacilli, which show these characters besides the Edinburgh bacillus; they show, nevertheless, slight differences, and may be considered as different species, but as to those general characters just mentioned, there is no doubt they belong to the same group of organisms. To sum up, then, the Edinburgh bacillus, judging by its mode of growth, clearly belongs to a group of species of bacilli which are notoriously septic bacilla. It has been found in a small percentage of cases of Scarlet Fever in blood taken from a prick of the finger; its spores occur in the epidermis of cases of Scarlet Fever, amongst other species of bacteria; it has no action when the bacilli or spores are injected subcutaneously, and in a pure state, into animals. You will, I think, agree with me that after such evidence, it would be quite unjustifiable and premature to call this bacillus the bacillus of Scarlet Fever. This whole question of the etiology of Scarlet Fever is no doubt an extremely difficult one, and only by combined work on an extensive scale, and by careful and accurate methods, can we hope to get at the truth of the matter; and in these efforts no criticism should be shunned or objected to, but, on the other hand, it must be criticism made in an unprejudiced and scientific spirit.

AN INVESTIGATION INTO THE SO-CALLED HENDON COW DISEASE, AND ITS RELATION TO SCARLET FEVER IN MAN.*

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MR. PRESIDENT,—Though the investigation which I bring before you to-night is not yet complete in many details, I feel that, as the subject is of such great public importance, and information is awaited with keen anxiety in the agricultural world, it is right that an account of what has so far been done should at once be published, especially as the evidence which has already come to hand has forced me to come to definite conclusions. I would add I feel strongly in investigations which are so strictly pathological that the assembly to whom the results should first be made known is this Society. I

* Abstract of a Report to the Agricultural Department of the Privy Council, read before a special meeting of the Pathological Society of London, December 15th, 1887.

desire, therefore, most cordially to express my indebtedness to Professor Brown, of the Agricultural Department of the Privy Council, for giving me permission to lay this matter before you, and to you, sir, for having enabled me to do so without any delay.

Origin of the Investigation.—I will ask you first of all, sir, to allow me to remind you of the circumstances which have led to a searching inquiry being instituted by the Agricultural Department of the Privy Council into a disease in cows and its relation to Scarlatina in man.

Scarlatina in Marylebone.—On December 18th, 1885, Mr. Wynter Blyth reported to the Local Government Board a sudden and extensive outbreak of Scarlatina which was associated with the distribution of milk by a particular retailer in South Marylebone. The retailer procured his milk from two farms, and there can be little doubt that the milk responsible for the outbreak was derived from a certain dairy farm in Hendon. Mr. Blyth and the medical officer of health for Hendon, Dr. Cameron, were unable to obtain any clue as to the source of infection, and Mr. Power was deputed by the Local Government Board to make an inquiry into the matter.

Mr. Power's Diagnosis.—Mr. Power, having come to the conclusion that the milk had not become infected from any human source, proceeded to investigate the condition of the cows. A careful examination was made with a view to detecting any disease among the cows, and it was discovered that there were several on the farm which were suffering from a disease characterised by the appearance of vesicles and ulcers on the teats and udders. At this stage Dr. Klein became associated with Mr. Power in the inquiry, and we are told that their belief in the existence of a constitutional disease among the cows on the farm capable of producing Scarlatina among human consumers of the cows' milk became unreserved. Dr. Klein took with him samples of milk, contents of vesicles, and discharges from ulcers, and afterwards two cows were purchased and conveyed to the Brown Institution. At this stage of the inquiry a cowman pointed out to Dr. Klein that he had seen the disease on a certain cow which was one of a batch that had been imported on November 15th from Derbyshire.

Dr. Cameron's Account.—In a paper read before the Epidemiological Society, Dr. Cameron gave a detailed description of this Cow Disease. He pointed out that it was a specific contagious and infectious disease, capable of being communicated to healthy cows by direct inoculation of the teats with virus conveyed by the milker from a diseased animal. Further, he pointed out that the disease was communicable to man.

The Disease in Man.—A trusty informant received the virus into a recent scratch on the forefinger while milking a diseased cow. General weakness, malaise, and loss of appetite resulted, and after about four or five days a vesicle or small blister appeared on the finger. This broke, and several others formed on the back of the hand. The whole hand and fingers became swollen and inflamed, the inflammation extending in broad lines as far as the elbow. The general disturbance lasted a fortnight.

Symptoms in the Cow.—Dr. Cameron regarded the disease in the cow as constitutional, and he pointed out the occurrence of Initiatory Fever, cough, sore-throat in severe cases, discharges from the nostrils and eyes, eruption on the skin round the eyes and on the hind-quarters, vesicles on the teats and udders, and visceral lesions.

Character of the Eruption.—The condition of the teats is described as follows:—The teats became enlarged, swollen to twice their natural size, and œdematous. On fingering them there was no feeling of induration. Vesicles or bullæ then appeared on the swollen teats and upon the udder between or near the teats. These varied in number from two to four on a teat, and in size from a pea to a horse-bean. The vesicle contained a clear fluid. The

vesicle, Dr. Cameron adds, was not preceded by a hardened papule, but was in the first instance a vesicle or bulla. The vesicles were rubbed and broken on milking, and left raw sores, sometimes red, in other cases pale in colour, with raised ulcerated edges. Sometimes a few accessory vesicles formed around the margin of these ulcerated sores. After the rupture of the vesicle a brown scab formed, which might remain attached for five or six weeks, or fall off in ten days or a fortnight, a smaller one forming afterwards. A thin, watery fluid exuded from under the scab and the sore ultimately healed. Many scabs varied in size from a shilling to a florin; they were about one-eighth of an inch thick in the centre, thinning off towards the edges. When picked off, the recently healed skin was of a pearly-blue colour, with slight tendency to bleed when the scabs were forcibly detached. According to Dr. Cameron there was no depression of the vesicle or pitting of the skin. The swelling of the teat gradually subsided.

Dr. Cameron's Diagnosis from Cow-pox.—Dr. Cameron thus sums up the diagnosis from Cow-pox: "No hard pimple preceding vesiculation, no subsequent formation of pustule, no central depression of the vesicle, no marginal induration, no areola, and no pitting." In connection with this, it should be observed that Dr. Cameron acknowledges that not all of his account had been the result of personal observation, and that of necessity some of the earlier symptoms had been learnt from other persons.

Dr. Klein's Account.—I will now follow with the account given by Dr. Klein. He states that on the teats and udders of two cows which he investigated there were several flat, irregular ulcers, varying in diameter from a quarter to three-quarters of an inch. Some ulcers were more or less circular, others extended in a longitudinal direction on the teat. The ulcers were covered with a brownish or reddish-brown scab. The margin of the ulcer was not raised, nor was there any perceptible redness of the skin around. A small vesicle would make its appearance on a greatly swollen teat, and in the course of a couple of days assume the character of the above ulcers. As a rule, the disease affected the teats; but in some there was also, on the lower part of the udder here and there, an ulcer. In such animals patches denuded of hair were noticed on various parts of the skin, the tail and back particularly. In these patches the epidermis was scaly, and the cutis more or less thickened. The animals looked thin, but not strikingly so. In feeding capacity, milking power, and body temperature there was nothing abnormal. Two of these animals, as I have already mentioned, were sent to the Brown Institution.

Post-mortem Appearances.—Both were killed, and at the necropsy there were found on one (No. 3) petechiæ under the pulmonary pleura, peripheral lobules congested, and adhesions between lower lobes of lung and costal pleura; in the liver, reddish streaks and patches; spleen and kidneys slightly congested; on the placenta, petechiæ. In the other (No. 4) there were numerous congested lobules in the lungs, and pleural adhesions; cortex of kidneys congested.

Inoculation Experiments.—To study the transmissibility of the disease, Dr. Klein inoculated four calves in the corium of the groin and the inside of the ear with scrapings from the ulcers after removal of the crusts. In calf No. 3 there was vesiculation at the margin of the spot inoculated, and in the centre commencing formation of a crust. On the seventh day each sore on the ear had enlarged to about half an inch in breadth, and was covered in its whole extent by a brownish crust. On the eighteenth day they had all healed up and become converted into flat scars.

The Micrococcus of Scarlatina.—To search for micro-organisms, Dr. Klein removed the crust from an ulcer on the teat, scraped off the most superficial layer, squeezed the ulcer, and made cover-glass preparations with the exuded

lymphs. Tubes of nutrient gelatine and nutrient agar-agar were also inoculated. Dr. Klein succeeded in isolating a micrococcus which, after three to six days at 20° C., formed at the line of inoculation small points or granules, whitish in colour and tolerably closely packed. In the depth of gelatine the channel of inoculation was visible as a whitish streak, made up of smaller and larger droplets. The gelatine was not liquefied. Cultivated in milk and incubated for two days at 35° C., the milk was turned solid. Microscopic examination of a culture showed that there was micrococci, diplococci, and shorter and longer chains. In both, after two or more weeks' incubation, very long chains were formed. The micrococci showed a peculiar mode of division. The chains showed branchings, and here and there in a chain, the presence of a larger element amongst the smaller ones.

Inoculation with Cultivations.—Dr. Klein inoculated two calves in the groin with the cultivated micro-organisms. One calf died in twenty-seven days. No ulcers resulted, as after inoculation with the scrapings of the sores; but at the necropsy there were found peritonitis, hæmorrhagic spots on the omentum, congested liver, kidneys, and lungs, petechiæ under the pleura, and pericarditis. In the second calf, on the nostrils and lips, and in the hard palate and gums, numerous irregularly outlined patches were seen. They were discoloured, brownish, with a very slightly raised margin, and a paler centre. This animal was killed, and at the necropsy there were congested lungs, kidneys, and hæmorrhagic patches on the spleen. Thus in neither of these cases was a real ulcer produced as the result of the inoculation of the cultivated organism, but the *post-mortem* appearances and anatomical features recalled to Dr. Klein the lesions of Scarlatina. In the kidneys, for example, there were congestion of the cortex, hæmorrhages and glomerulo-nephritis, and granular or opaque swelling of the epithelial cells and infiltration with round cells. From the blood of the heart the micrococcus which had been used in the inoculation was recovered. In view of the evidence, Dr. Klein concluded that the *streptococcus* was identical with the virus of the Cow Disease, and that it produced a disease very closely resembling that of Scarlatina. In a paper read before the Royal Society, Dr. Klein describes how the work was carried on during 1886-87. Dr. Klein found in the blood of human Scarlatina that a micrococcus was present in four out of eleven cases. The micrococcus proved to be identical in its microscopical appearances and in its characters on cultivation with the micrococcus found in the Hendon Cow Disease. And by inoculation with a cultivation of the Scarlatina micrococcus, he states that a cutaneous and vesical disease resulted, which was identical with that produced in the calves infected with the micrococcus from the Hendon cows.

Dr. Klein's Conclusion.—In conclusion, Dr. Klein says:—"It must be evident from these observations that the danger of Scarlatinal infection from the disease in the cow is real, and that towards the study and careful supervision of this Cow Disease all efforts ought to be directed to check the spread of Scarlet Fever in man."

An Eruptive Disease is Reported.—Cases of an eruptive disease of the cow having been reported to the Agricultural Department of the Privy Council, I received instructions from Professor Brown to undertake a series of researches on the lines indicated by Dr. Klein. The first animal that came under my observation had been purchased and removed to the Royal Veterinary College. This cow I shall speak of as No. 1. She was fairly well nourished, ate well, and was normal in her milk supply. Her temperature was normal on admission, but subsequently rose from Mammitis occurring as a complication. There was no desquamation, nor were there in this case any patches destitute of hair.

Character of the Eruption.—But there was a characteristic disease of the

udder and teats. On the right teats there were numerous sores varying in size from a pea to a penny. The sores were covered with crusts varying in thickness and generally fissured. In some they were flat, in others conical. Some were with difficulty removed with forceps, others were readily detached. The crusts varied in colour from reddish-brown to a very dark brown or almost black. On detaching or scraping a crust, there was a granulating and somewhat indurated base. On the right anterior teat there were several ulcers, from which apparently the thick crusts had been detached, and new scabs were forming. On the left posterior teat there were unusually large dark-brown crusts, especially at the extremity of the teat.

Examination for Micro-organisms.—Having entirely removed the crusts from some of these ulcers, I squeezed the base, and from the discharge I made a number of inoculations in nutrient gelatine and nutrient agar-agar. I also collected the discharge in capillary tubes and sealed them immediately, and also made a number of cover-glass preparations.

Inoculation Experiments.—With the discharge and with scraping from the ulcers I inoculated four white mice, one guinea-pig, and two calves. Of the two calves, one was inoculated by scarification on both ears; the other was scarified on the left ear and inoculated on the left groin by making an incision through the corium and rubbing in a scraping from an ulcer. In each ear and in the groin there were positive results. In the large brown calf inoculated in the right ear in two places, one place went through the following changes. On the third day there was apparent vesiculation, and commencing formation of crust. From day to day the crust thickened, and on the eighth day the crust was at its height, and detached at the edges. By removing the scab an ulcer was exposed. There was slight inflammatory thickening. About the thirteenth day the ulcer had quite healed. This corresponds very closely with the results obtained by Dr. Klein. The temperature of the calf was only slightly raised.

Cultivation Experiments.—I will now describe the results of the cultivations. The inoculations had been made for the most part in tubes of nutrient gelatine and nutrient agar-agar solidified obliquely. To separate the different organisms that might be present, I employed either Koch's plate-cultivations or Esmarch's method, or I simply drew the platinum needle in a line on the surface of the nutrient medium. Agar-agar tubes, inoculated in this way, were placed in the incubator at 37° C., and gelatine tubes were kept at 20° C. In the course of two or three days, a growth commenced along the track of the needle, consisting mostly of china-white, yellow, orange, and little dot-like colonies. Examination of the latter with a magnifying glass showed a little darkened centre, corresponding exactly with the figure given by Dr. Klein. Cover-glass preparations revealed at once an organism identical in form with that described by Dr. Klein. From these colonies cultivations were established in a number of tubes of nutrient gelatine, and in two or three days, at 20° C., the cultivations gave the peculiar finely-dotted appearance which has been figured and described so minutely. These preparations were demonstrated to Professor Brown on November 23rd. This micrococcus grows also in broth and turns milk solid, so that it exactly corresponds with the description and figures given by Dr. Klein of the so-called *micrococcus Scarlatinae*. As I had procured cultivations, the animal was ready to be killed, and Professor Brown was anxious that Dr. Klein should be present at the *post-mortem*. In deference to Dr. Klein's wishes, the cow was conveyed to the Brown Institution, on the condition that due notice was given to enable us to be present at the necropsy.

Another Outbreak.—On Nov. 24th I accompanied Professor Brown to see another cow affected with a similar disease belonging to a herd in another county. The affection in this case was not so severe, but it also showed the

same characteristic brown or reddish-brown crusts, which on removal exposed a granulating thickened base with exudation of a lymph-like discharge and slight hæmorrhage.

Natural Infection.—The cow was suckling a calf, and this calf had previously been suckled by another cow also affected with the same eruption of the udders and teats. The calf had developed flat angry-looking ulcers on the nose and hard palate, and an eruption in the hairy part of the nose near the muco-cutaneous line of union. Cow No. 1 having been sent to the Brown Institution, a second cow (No. 2) was purchased from the same herd as No. 1. This cow also had a calf with suspicious places on each nostril; on the right side an apparent abrasion, and on the left a distinct but thin, flat, brownish scab. It would appear, then, that these calves had inoculated themselves by sucking the sore teats.

Inspection of an Infected Herd.—On Saturday, Nov. 26th, I proceeded to the affected farm from which the diseased cows, Nos. 1 and 2, had been purchased. On my arrival I made inquiries as to the first occurrence of the outbreak. I gathered that it appeared about the end of September, but it was said that no fresh cows were imported at that time. The disease commenced at a farm which I shall call V. The cows were moved from farm to farm, so the disease spread through all the farms, W, X, Y, and Z. In all there were about 170 cows. By examining two milkers I obtained the following history.

They said that the teats swelled, were hot to the touch, and very tender. As a result the animals were milked with difficulty. The milkmen resorted to the standing position, as otherwise they and their milk-pails were upset. In some cases the pain on milking was so great that the animals became almost unmanageable and had to be tied by the legs. One man described the pain caused by milking the severe cases as "most barbarous." They stated that a little white bladder would rise up on the teat, which would become as large as a pea or much larger, and then was burst in the milking. As a result a sore formed and became covered with a scab. Matter formed under the scab, and as the scabs were broken in milking, matter and blood would come out on their fingers and get mixed with the milk. Sometimes the scabs would become rubbed off, in other cases they fell off, and finally in four or five weeks the sores would be healed.

The Disease in Man.—At these farms I found that the disease had been communicated to several of the milkers. They have been inoculated some weeks before my visit, so I had at this stage no opportunity of seeing the early changes. I had therefore to rely a great deal on their description. I will select a few cases.

Cowman R—— showed me a scar on his right hand. He said he was the first to catch the disease. It came as a hard, painful spot, which formed matter and then a big scab. He had continued milking ever since, but had no fresh "places."

Cowman F——, about a month ago, noticed spots which appeared on both hands. His fingers swelled and were painful. He said it came first like a pimple and felt hard. "Then it "wept out water" in four or five days. There were red marks creeping up his arm. There was a sort of throbbing pain, and he could not sleep at night. When I saw him I found on the right hand a scar, but on the left hand there was an ulcer, about the size of a shilling, covered with a thick black crust. The crust was partially detached, and exposed a granulating ulcer. It was the exact counterpart of an ulcer on the cow's teat.

Cowboy H—— had both hands bad about a month ago, first the index finger of the left hand and then the right hand. He says that it came up like a hard pimple, and the finger became swollen and red. After a few days it "wept out" water, and then matter came away. Both his arms were

swollen, but his left arm was the worst. About a fortnight afterwards he noticed "kernels" in his armpits, which were painful and kept him awake at night. His arms became worse, he could not raise them, and he had to give up milking. He also had a bad place on the lower lip. On examination I found that the auxillary glands were still enlarged and tender. He volunteered the statement that the places were just like the sore teats.

H——, the bailiff's son, had a sore on the upper lid of his right eye and left hand. In both places he had previously been scratched by a cat. The right had also been infected. It commenced, he said, a fortnight ago. His hands were swollen, red, and hot. He felt very poorly, and went to bed. Little spots like white blisters appeared on the back of his right hand; these broke and "rose up" in thick scabs. He was very ill for two or three days, but did not send for a doctor. He had painful lumps at the bend of the arm and in the armpit. He gave up milking, and had not taken to it since.

Absence of Scarlatina among Consumers of the Milk.—As I have said, there were about 160 animals on these farms, and all, or nearly all, had contracted the disease. The milk was drunk on the farms and in the village, but most of it, amounting to eight churns a day—that is, sixty-four barn gallons, or 1,088 pints—was sent twice a day to a large city. Not being distributed in a wealthy neighbourhood, we may roughly estimate the number of persons drinking the milk at about 1,500 or 2,000. I was informed that there were no cases of Scarlatina on the farms or in the village. In the town district in which the milk was distributed there was no epidemic. From these observations and researches, I think that we are justified in concluding that the disease I have described is identical with the Hendon Cow Disease. For—(a) In both cases we have an eruption confined almost entirely to the teats and presenting precisely the same appearance and with the same history. (b) In both the disease is communicated from animal to animal by the virus being conveyed by the hand of the milker. (c) In both the disease is communicable to man when the virus is received into abrasions or scratches on the skin, and produces, judging from the description, a similar disease. (d) In both the disease is communicable by experimental inoculation. (e) In both there are occasionally the same constitutional symptoms, slight rise of temperature, eruption on the skin, patches devoid of hair, running from the eyes, etc. (f) In both there are streptococci associated with the disease, which are identical in every respect in their microscopical appearances and in their character on cultivation. And therefore I am of opinion that we are justified in concluding that the Hendon Cow Disease was not Scarlatina in the cow, and that in the Hendon cases the source of infection was from some unascertained human source.

Nature of the Disease.—I now pass on to give you my opinion as to the nature of this disease. The appearance of the eruption, especially in the bailiff's son, aroused a suspicion in my mind, and on returning from my visit to the farm I very earnestly questioned some leading veterinary surgeons as to the nature of this disease in the cow. I was assured that it was very common and very well known, though not described in the text-books of veterinary medicine. It was referred by them to various causes. In deference to their opinion I even suggested that if it were an undescribed disease it might appropriately be termed a contagious mammillitis. But my suspicions clung to me, and were strengthened by studying descriptions of affections of the teats in the cattle, and I expressed to several my disappointment at not having had an opportunity of seeing the earlier stages of the disease in man. I therefore determined to visit the affected farm again and again with the hope of seeing some fresh cases. On December 2nd I was rewarded for my trouble, for in course of conversation with a head cowman my attention was drawn to a lad who was standing at some little distance. I was told that his was a new case, and an examination of his face revealed to me in a

moment that my suspicions were well founded, for I was convinced *this disease of the teats of the cattle was the true Jennerian Cow-pox*. My first impulse was to carry the boy straight off to London, but the question of accommodation led me to have advice first as to what course I should pursue. I therefore made a drawing of the boy's face, filled a number of tubes with lymph, and spent the rest of the day in visiting a farm I had not previously seen. Here I found a very intelligent head cowman whom I had not interviewed before, and I determined to elicit from him all he knew of this disease in his own words. He said that he had long known this disease of sore teats, and that twenty years ago he had had the sores on his fingers, just in the same way as the lads now on the farm. He added that he had no fear of milking the cows, because he was sure he would not get it again. I then asked him to tell me exactly what occurred in the teat from the very first, and he said that it began as a hard pimple on the red teat, that this got a white head, and then there came a blister with watery fluid, which was subsequently broken in the milking. Another cowman added that he had seen the watery fluid get like "brainy stuff" before the blister was broken. Thus, the history of what occurs must be as follows: First, there is a papule and then a vesicle, with first clear and then turbid contents. The vesicle on or before the turbid stage is ruptured by the hand of the milker, and the normal course of development of the pock is interrupted. The irritation of milking twice daily causes extensive ulceration and consequent formation of large fissured crusts; and thus, instead of getting well in about a fortnight, the disease is prolonged for four or five weeks or longer, and when finally healed there is an irregular scar. It is the hand of the milker which is responsible for the striking differences in appearance from the normal pock, such as the absence of pustule and pitting; but as for the reported absence of the initial papule in the Hendon cases, this is easily accounted for by Dr. Cameron's admission that for the earlier symptoms he relied on the statements of others. No doubt these accounts were incomplete, as in the first milkers' description to me. On returning to London in the evening, I confided my convictions to Dr. Curnow, and asked his advice as to bringing the boy to London. Dr. Curnow very kindly arranged to have him admitted to the Seamen's Hospital, Greenwich; and on the following day (Dec. 3rd) I persuaded the boy to accompany me there so as to have him under observation. Suffice it to say that it was a most typical pock, and that lymph taken from the vesicle produced in the calves typical Vaccinia.

Diagnosis from Spurious Forms of Cow-pox.—The characteristic development of the pock on the boy's face and the production of typical Vaccinia in the calf with the lymph were the conditions necessary for proving conclusively that this was the true Cow-pox. The spurious forms are local eruptions on the teats, and are some of them communicable to the hands of the milker. They were recognised by Jenner,* Hering,† and Ceely,‡ and stress was laid on the necessity of being able to diagnose them, as they afforded no immunity from Small-pox. There is only one form—the white or Blister-pock—which is likely to cause difficulty in diagnosis. This disease is of short duration. The vesicles are only sub-epidermic, attain their height in twenty-four hours, are not truly umbilicated, and have no areola, and after bursting form a thin scab. There is no fever.

General Remarks.—Now, sir, the question may occur to you, Is this micrococcus identical with the virus of Vaccinia? I am devoting my attention to this and to the study of any other organisms which may be present in the

* "An Inquiry into the Causes and Effects of the Variolæ Vaccinæ," etc., 1798.

† "Ueber Kuhpocken an Kuhen," 1839.

‡ "Trans. Prov. Med. and Surg. Assoc.," vol. viii., 1840, and vol. x., 1842.

lymph. If it be true that the same streptococcus occurs in Scarlet Fever, Diphtheria, Puerperal Fever, in properly preserved milk, and perhaps, too, in Foot-and-mouth Disease, there can be but little doubt that we have only to deal with a micro-organism, which, when cultivated and inoculated in healthy animals, is capable of setting up a septic inflammation. Indeed, the *post-mortem* appearances observed by Dr. Klein point, in my mind, only to septic complication, which may equally occur in Cow-pox, in Scarlatina, and in other febrile diseases. I think that the explanation of this micrococcus being found occasionally in Scarlatina is that, in severe cases with ulcerated throat, the blood is unable to cope with the invasion of micrococci from the surface lesion. If this be so, the opinion which I wrote early in 1886 concerning the micrococci which had been described in measles applies also to this micrococcus—viz., that in this and in many other cases I only described these organisms as distinct species "from their association with particular diseases, not because they are believed to be casually related, for there is very little evidence in favour of that belief as yet, but purely for convenience of reference. In many cases they are probably only septic organisms which have found a pabulum in dead tissue; others appear to be identical with organisms which have been found in pus."*

Conclusions.—As the practical outcome of this research, I would strongly urge that prompt measures be enforced for isolating diseased animals, and preventing the spread of the disease through the herd. And as the milk is liable to be contaminated with blood, pus, and discharges from the teats, I consider that it would only be consistent with the most elementary rules of sanitation, that only the milk obtained from the healthy cows in the herd should be sent into the market. Such measures, I trust, will lead to the alleviation of much suffering in the cows, ensure greater cleanliness in the milk, and provide another source of vaccine for public use.

SCARLET FEVER, SMALL-POX, AND COW-POX.

IN connection with this subject, the following letter appeared in the leading medical journal on December 24th:—

To the Editors of "The Lancet."

SIRS,—In your issue of December 17th you give an abstract of Dr. Klein's paper, read at the Epidemiological Society, on "Some of the Infectious Diseases Common to Man and the Lower Animals," and also an abstract of Professor Crookshank's investigation into the so-called Hendon Cow Disease and its relation to Scarlet Fever in man. With your permission, I would like to make a few remarks on some of the points referred to in these papers, as they are of some importance.

The first is with regard to the relation of human Variola and Cow-pox. The popular notion in this country is that Cow-pox is merely Small-pox modified by its passage through the cow, and Dr. Klein brings forward this notion in support of his contention that the mysterious Cow Disease at Hendon was Scarlatina, or, at any rate, produced that malady in people who partook of the milk of the affected cattle. Now, I have for years, in your columns and elsewhere, maintained that human Variola and Vaccinia are not the same disease, but are quite distinct, and cannot by any known means be transformed. I still maintain this, in the face of the assertions that Ceely, Badcock, and one or two others have succeeded in converting Small-pox into Cow-pox; and if Dr. Klein relies upon these to establish his position with regard to an eruptive mammary disease of cows giving rise to Scarlet Fever in mankind, then I am afraid he stands upon very shaky ground. As Dr. Klein himself acknowledges, he utterly failed to effect the transformation of Small-pox into Cow-pox, even when acting under the direction of Mr. Ceely, and experimenting under the most favourable conditions on more than thirty milch cows

* "Manual of Bacteriology," p. 201.

and heifers. And I will make bold to say that if Dr. Klein carries on experiments all his life in this direction he will be unsuccessful, as have several continental commissions (not alone the French Commission under Chauveau), and every individual—myself among the number—except the three or four above mentioned. Clinically and anatomically they differ widely, and their points of similarity are few and trivial. All attempts to convert Variola into Vaccinia by inoculating cows with Small-pox matter have failed—have failed in the hands of careful and most able experimentalists, and they will fail. But in this case we can resort to our heart's content to experiments upon our own species to prove whether the two maladies are due to one virus—a course which we can so seldom adopt with regard to other diseases. We can inoculate human beings with vaccine virus with the view of transforming Vaccinia into Variola, and if the latter is the former the results in every case should not be doubtful. Transferred to its original soil, the virus should be itself again, and produce Small-pox with all its well-marked features. Since the days of Jenner countless millions of persons have been subjected to this experiment, if we may so designate every-day vaccination; and I ask if there is an instance on record in which Vaccinia became Variola? I certainly know of none. Surely it is as reasonable—if not more so—to attempt to convert Vaccinia into Variola as to transform the latter into Cow-pox. Compare the ease with which Vaccinia can be transmitted from calf to calf, from the latter to the child, and *vice versâ*, throughout endless generations, and without the slightest tendency to become Variola, with the very few recorded cases of supposed production, experimentally, of the disease from Small-pox virus, which was for ever changed by implantation in the body of the cow.

The virus of Cow-pox and that of Small-pox differs in no respect from the viruses of other contagious diseases in regard to preserving its specific potency. The viruses of Anthrax, Tuberculosis, Glanders, Rabies, Scarlatina, Measles, etc., will always produce none other but these diseases, and if the symptoms produced by them when inoculated in other species of creatures than those to which they are native are somewhat different; yet, when carried back to their original soil, they are again the same in everything. I am quite astonished at the way medical men in this country have treated this question of identity of Cow-pox and Small-pox, and accepted the assertion as to this identity without resorting to proof.

With regard to the existence of Scarlatina in cows, or a disease in them which will give rise to that malady in people through ingestion of milk, I am seriously inclined to doubt it. The disorders of cows have been closely studied of late years by veterinary surgeons, and nothing resembling Scarlet Fever had been observed. Scarlet Fever in man, if derived from the cow, would also be that disorder in the bovine. I should not like to be considered dogmatic in the matter, but I think it will eventually be found that a mistake has been made as to this Hendon disease, and that Professor Crookshank is on the right track. We shall then have to express regret that such a panic should have been caused and such serious injury should have been done to a most important industry through over-anxiety and haste to protect the public from a dreaded scourge.

With regard to Professor Crookshank's statement that veterinary surgeons he inquired of informed him that the disease he saw affecting the cows' udders was very well known to them, but was not described in text-books of veterinary medicine, I may mention that in my work on "Veterinary Sanitary Science and Police," published twelve years ago, in the section on Variolous Disease in Animals, I particularly described Cow-pox and the diseases of the udder with which it might be confounded. Cow-pox and Horse-pox are not at all rare diseases.—I am, sirs, yours truly, GEORGE FLEMING,

Dec. 21st, 1887.

Principal Veterinary Surgeon of the Army.

A DISTINGUISHED REWARD TO A DISTINGUISHED CAREER.

ELSEWHERE we have referred to the mission sent by Her Majesty to King John of Abyssinia, the object of which was to prevent war between that monarch and the Italian Government; and we mentioned that Veterinary-Surgeon Beech, of the Army Veterinary Department, who is temporarily seconded for service with the Egyptian Army, and who has been alluded to in reports of the progress of this mission as Major Beech, accompanied it. The mission, in fact, was composed of only two Englishmen, Messrs. Portal and Beech, and a native interpreter. It is now publicly announced that "The Queen has been pleased to confer a Companionship of the Order of the Bath upon Mr. G. H. Portal, Second Secretary in her Majesty's Diplomatic Service; and a Companionship of the Order of St. Michael and St. George on Mr. J. R. Beech, attached to the Egyptian Army, in recognition of their services in connection with the recent mission to King John of Abyssinia."

This is a most exceptional distinction which has been bestowed on Mr. Beech, as it has never, we believe, been conferred on any one under the grade of field officer, and that of Mr. Beech is only lieutenant, though he holds the rank of major in the Egyptian Army. Besides, he has not yet been seven years in the army, though he was in the Egyptian War of 1882, and was present at the battles of Kassassin and Tel-el-Kebir, for which he received the medal with clasp and bronze star. He was also in the Soudan Campaign of 1884, and was in the battles of Teb (slightly wounded) and Tamai, for which he received two additional clasps, and was honourably mentioned in the *London Gazette* of May 6th, 1884. In the following year he was with the Nile Expedition for the relief of Gordon, crossed the Desert towards Khartoum, and was in the battle of Abu-Klea. For this expedition he received two more clasps, making five in all for Egyptian engagements. This record of service for so young an officer would be difficult to beat; and now comes the high distinction conferred by her Majesty, for his very hazardous mission to Abyssinia, and the manner in which it was accomplished. The profession, we are sure, and especially his brother officers in the Veterinary Department, will feel gratified at this well-deserved honour awarded to our young friend, and will cordially felicitate him on his good fortune, wishing him further honours and continued chances of winning them. Such recognition conferred on one does honour to the whole profession.

 CALF-VACCINATION.

THE following is a translation of the more important portions of a memoir on the Belgian central establishment for cultivating vaccine. This establishment is located in the Brussel's Veterinary School, and is under the able direction of Professor Degive, a teacher in that school, who is the author of the memoir. The translation has been made by First-class Veterinary Surgeon Duck, A.V.D., Aldershot, who recently visited the institution.

The vaccine is cultivated from calves of three or four months old, and weighing at least 100 kilos. (about 220 lbs.). These calves are procured from a butcher in the town by a special agreement. The director takes care that every calf is in a perfect state of health. Immediately after the crop of vaccine has been taken the calves are destroyed and the carcasses carefully examined *post-mortem*. If there be any sign of disease in an animal, the vaccine obtained from that source is destroyed.

Vaccine Production.—Vaccine production comprises four operations:—

- (1) The insertion or sowing ; (2) The crop or harvest ; (3) The preparation ; (4) The preservation.

(1) *The Insertion or Sowing*.—The calf is securely fixed on a special operating table. This table is provided with rings and straps for securing the head, fore extremities, and the left hind leg ; a vertical bar terminating in a ring keeps the right hind leg extended and raised from the body ; there are also two zinc reservoirs in suitable positions to catch the urine and the fæces. The incisions are made over the right of the abdominal region, and over the scrotum. They are about 2 to 3 centimetres in length, and are cut or scratched through the upper layer of skin. Those over the abdominal portion are transversely placed, the distance between each being 3 or 4 centimetres. They are placed chequerwise in parallel series to the long axis of the body. The scrotal incisions follow the line of the testicles, and are closer together. The ordinary number of incisions varies from 60 to 80, of these 16 to 18 are scrotal, and 46 to 64 are abdominal. The parts selected for the operation are shaved and carefully cleaned. The skin is then lightly stretched and divided with the point of a lancet or of a sharp straight bistoury. After the incisions are made a damp cloth is used to wipe away any drops of blood, then the insertion of the vaccine is commenced. The vaccinal seed or vaccine that answers best in our cultures is the glycerine pulp of which we shall speak later on. A small ivory spatula is used to deposit the pulp in the incisions, and to facilitate this the skin is lightly pressed to open the lips. In about 10 or 15 minutes time, when the inoculating material is somewhat concentrated by evaporation, the calf is released and put in the stable. To prevent touching or scratching the inoculated parts, cradles and heel-ropes are used. The stable is roomy and well ventilated, and is kept at a mean temperature of 18° C. In winter the temperature is kept up by a thermo-syphon. On the sixth, sometimes on the fifth day the pustules are sufficiently developed for the second operation—*i.e.*, the collection of the crop or harvest. They are then very striking, exhibit a central crust, brownish-yellow, or whitish-silver like zinc, more or less developed, surrounded by a light areola of reddish hue.

(2) *The Crop or Harvest*.—There are two principal things to take in the vaccinal pustule—the one a serous, limpid part, the lymph ; the other a greyish, half-solid, more or less soft substance, the pulp. This last is formed by the tissue, the pulpy substance (*parenchyme*) of the pustule. At the present time it is recognised that of these two substances the pulp is much richer than the lymph in virulent elements, and stronger in vaccinal activity. Thus we have now discontinued the use of pure lymph, and we now employ the pulp.

The following is the method we now use in collecting or harvesting the pulp :—The calf is secured on the table, as in the previous process, and the inoculated portion is cleansed with a cloth dipped in cold or tepid water. Each pustule is compressed in a specially prepared forceps (*pince de peau*), the crust is removed with a lancet and put aside ; any blood that may flow from the pressure of the forceps, is stanchd with a clean cloth ; then the soft, pulpy, greyish substance is scraped off and placed in a small porcelain cup. After this has been gathered, the calf is slaughtered and *post-mortem* examination made. Should there be any sign of disease the vaccine is not used.

(3) *Vaccine Preparation*.—The vaccinal pulp thus collected is used to make the following preparations :—(a) The pulp “Glycérineé” ; (b) The pulp “Glycérolée” ; (c) The liquid vaccine ; (d) The dry vaccine.

(a) *Pulp Glycérineé*.—The raw vaccinal pulp is placed in a mortar to be divided (trituated) into a mass as homogeneous as possible. To this is

added and mixed a certain quantity—a third or a half—of glycerine, chemically pure or with the addition of one per cent. of phemi acid. By this means is obtained a sufficiently fluid pulp of a syrupy consistency, endowed with pronounced virulent energy, and capable of being kept for many weeks or even months. This pulp is *exclusively* used for the inoculation of calves destined to keep up the supply of vaccine. Until required for use it is kept in white or brown glass tubes, like the fingers of a glove, in length about two to three centimetres, in breadth from three to eight millimetres. These tubes are corked and enclosed in tinfoil paper.

(b) *Pulp Glycérolée*.—This is prepared in the same manner as the above; it is formed from a mixture of equal parts of raw pulp and of “Glycériolé” starch. It constitutes the most efficacious and the most used matter for the inoculation of the human subject. It is preserved and forwarded between two small glass slides, or in finger-glove tubes. The glass slides are peculiar; one of them has a central depression of elliptical form, into which the vaccine is deposited; the whole is enclosed in metallic paper. The slides contain sufficient for from two to five people. The tubes hold large quantities sufficient for from ten to 100 people.

(c) *Liquid Vaccine*.—After the removal of the pulpy substance from the pustule, and as a result of the scraping, there is an exudation of a serous, limpid fluid; this is the vaccinal lymph. This liquid is collected with an ivory spatula and deposited in a porcelain cup. The vaccinal lymph alone, or with the addition of glycerine, or of glycerinated water and a small quantity of pulp, constitutes the liquid vaccine. To prepare this, the fresh pulp is diluted with equal parts of glycerine and of *vaccinal lymph*, and then filtered (*étolée en fil de cuivre*). When the supply of lymph is not sufficient to fill all the tubes distilled water is added. As the filtered liquid contains a certain proportion of the solid elements of the pulp, there is a difficulty in getting it into the capillary tubes. To overcome this the liquid is aspirated into the tubes by the mouth in front of a mirror, or else (and preferably) through the means of an india-rubber tube or quill provided with a glass mouthpiece; one extremity of the capillary tube is inserted into the india-rubber tube or quill, and held by two fingers; it is now only necessary to put the mouthpiece between the lips and aspire lightly to draw the liquid into the capillary tube. By this method—the invention of M. Gratia—any accident from the introduction of vaccine into the mouth is prevented. The capillary tube is filled up to within a centimetre of the extremity within the aspirator, and is then closed cold by putting both ends into a mixture of equal parts of suet and paraffin. In this way the tube is closed at each extremity by a small whitish cylinder of the length of half a centimetre, without the interposition of the smallest quantity of air.

(d) *Vaccine on Ivory Points*.—These ivory points are three centimetres long, and about six millimetres broad. To charge these points a certain quantity of vaccine liquid rich in solid elements is prepared. The triturated pulp is then diluted in pure vaccinal lymph, or in distilled water, and then filtered in the above described manner. The points are then dipped twice, care being taken that they are dried each time, and that only one surface is wetted. As soon as prepared they are placed (the extremities tapering down) on the rim that runs round the under portion of a common plate. The drying takes place in the sun or before an ordinary fireside, the heat of which should not exceed 35°C. To ensure the preservation of the vaccine the portion covered with the material is then dipped in gum and dried.

(e) *Powdered Vaccine*.—Vaccine powdered is obtained by a simple and economical method. The fresh pulp, after being collected, is exposed upon a glass slide. This is placed under a bell-shaped vessel, the border of

which rests upon a plate of unpolished glass, within which there is a receptacle containing some sulphuric acid. An india-rubber tube placed in the interior of the vessel communicating with a simple glass pipe fitted on to a spigot of town-water creates a vacuum rather like a barometric vacuum. Under the double influence of this vacuum and of the sulphuric acid, vaccinal pulp is soon dried. After at the most twenty-four hours it can be reduced to powder and put up in cardboard boxes.

(4) *Preservation of Vaccine.*—To preserve as far as possible in this vaccine its transmissible potency it must be kept under conditions which will prevent its being altered or its activity diminished. It must be protected from heat, light, air (oxygen), and moisture. With the object of safeguarding the vaccine from these influences the ivory points and the boxes containing the vaccinal powder are placed in narrow-mouthed, dark glass vessels, and kept in a dry place. The liquid vaccine and the vaccinal pulp are put in a cupboard, and kept in as fresh a place as possible. In hot weather the tubes and slides are kept in a suitable ice-house.

A statistical register is kept for each inoculated subject, description, dates of entry, of inoculation, of collection and discharge, the number of the vaccination, the inoculated material, the number of insertions and of pustules, the weight at entrance and discharge, the amount of the collection, observations on the general health, and *post-mortem* lesions if death occurs.

Reviews.

GLANDERS: HOW IT ARISES AND SPREADS; HOW TO PREVENT IT; AND HOW TO STAMP IT OUT. By W. HUNTING, F.R.C.V.S. (London: H. and W. Brown. 1887.)

In a little book of eighty-two pages, Mr. Hunting gives a popular exposition of the serious disease known as Glanders, and of the measures which should be adopted for its suppression. There is nothing of novelty in the views he expresses, which are chiefly those of every one who has had experience of the troublesome malady; but we suppose the book was not intended for the veterinary profession, but rather for the public who have to do with horses, and who are liable to, or do really suffer from, its ravages in their stables. With nearly everything Mr. Hunting states, in treating of the pathology of Glanders, we entirely concur, and we are in full agreement with his preventive and suppressive measures. We might take objection to his statement that the poison of the disease is not volatile; our experience leads us to believe that, under certain circumstances, it is so, and we could give powerful facts in support of this belief. It is best, at any rate, in dealing with such an insidious and destructive disorder, to err on the safe side, and the acceptance of the opinion that the virus may become volatilised is to be recommended. There is no harm likely to arise from the application of measures based on this opinion, whereas there is danger, we are convinced, in entertaining the notion promulgated by Mr. Hunting. In our army, which was half-a-century ago a hotbed of Glanders, but which is now entirely free from it, not a case having occurred during 1887, the measures adopted are founded on the experience that the virus may be volatile, as well as fixed.

With regard to the cause of Glanders, Mr. Hunting is of opinion that it is due solely to contagion, and in this we also concur. He rather goes out of his way, however, to attack the opinion expressed by Dr. Fleming in his work on "Veterinary Sanitary Science and Police," to the effect that the disease arises spontaneously. That work was written in 1874, and published early in 1875 (not ten years ago, as Mr. Hunting asserts), and such was the view then entertained by all the leading veterinarians in this country and on the Continent; while it has been insisted on in textbooks on veterinary medicine and popular works on the horse, written by veterinary surgeons, up to quite a recent period. Indeed, if we are not misinformed, veterinary teachers at the present time believe and teach that Glanders may be due to other causes than contagion, and certainly one of them has stated this in his book, published at least five years after Dr. Fleming's Manual. But particularly startling is the fact that Mr. Hunting himself once rather believed in its spontaneity, and printed his belief months after the appearance of that work. In the first volume of the *VETERINARY JOURNAL* (July, 1875) that gentleman has an article on the disease in question, and at page 2 he states: "Of every hundred cases ninety-nine are due to contagion, and *probably* the hundredth is traceable to the same cause, if we could only follow the hidden mode of communication." When the probability became a certainty in his mind the author does not inform us, but it possibly was when the views of Dr. Fleming and others were changed several years ago.

So far, however, from the notion of the spontaneous origin of Glanders being productive of harm, it may be truthfully asserted that it has had a most beneficial effect, as it led to improved stables and management of horses, and, in fact, compelled indifferent people to adopt troublesome and expensive hygienic measures which they would have been little inclined to do, perhaps, if they had thought Glanders was not due to insanitary causes. Therefore the error in pathology was one on the proper side; and though we may now wonder why such an error ever existed, yet it must be remembered we all—Mr. Hunting included—know more about this redoubtable malady at the present time than we did twelve, ten, aye, two years ago.

There are one or two disputable points which the author raises, besides that relating to the volatility of the virus, that might be examined, but we forbear, and conclude by recommending the booklet to those who wish to know what should be done in order to get rid of Glanders.

SPRAINS: THEIR CONSEQUENCES AND TREATMENT. By C. W. MANSELL MOULLIN, M.A., etc. (London: H. K. Lewis. 1887.)

There is, perhaps, no injury which occurs more frequently in animals, and for which the aid of the veterinary surgeon is invoked, than sprain—be it of muscle, tendon, or ligament. And in no animal is this injury so frequent, or of so much moment, as in the horse: from the fact that, owing to the nature of its services to man, it is most exposed to this lesion; that these services only too frequently militate against a permanent cure; and also because, of all the domesticated animals, the

horse is the most valuable. But in itself, sprain is essentially the same, whether it occurs in man or beast, and the indications for effective treatment do not differ in either; though it must be confessed that nearly always the veterinary surgeon labours under great, nay, most serious, disadvantages when compared with those the surgeon has to encounter. Mr. Moullin's book on sprains must, by both classes of practitioners, be accepted as the best contribution to the subject of any which has yet appeared, and should receive the most careful consideration from them, especially with regard to the *rationale* of treatment—oftentimes so unsatisfactory. Based upon the most modern pathology, and evincing a thorough knowledge of the subject, no better guide could be found than Mr. Moullin's handy little treatise.

Proceedings of Veterinary Medical Societies, &c.

CENTRAL VETERINARY MEDICAL SOCIETY.

At an ordinary general meeting, held on 1st Dec., 1887, at the First Avenue Hotel, Holborn (Mr. Sheather, the President, in the chair), the following Fellows attended:—Professor Axe, Messrs. J. Hall-Brown, Alfred Broad, James Broad, Chesterman, Cheesman, Elworthy, Hunting, Lowe, Oatway, Overed, Price, Raymond, Rickards, Irwin-Roberts, Rowe, Roots, Samson, F. Smith, Slocock, Willis, Woodger, Wragg, and the Secretary. Professor Crookshank, Messrs. Cordy, Halford, Hawes, Loveridge, Perry, and William Wilson were present as visitors.

The minutes of the preceding meeting were read and confirmed.

Letters were read from Professors Pritchard and Walley, and from Mr. Harrison, of Hertford.

Mr. Henry Edgar, of Dartford; Mr. J. S. Hurndall, of Blackheath; and Mr. H. M. Singleton, of Ealing, were elected Fellows of the Society.

Messrs. H. W. Farrow and Arthur Rogerson were nominated for Fellowship.

Mr. IRWIN-ROBERTS brought before the meeting the brain of a horse, having a Tumour in the right lateral ventricle; the weight of the Tumour when fresh was $1\frac{3}{4}$ ounces. Mr. Roberts gave details of the case.

The PRESIDENT remarked on the extraordinary size to which Tumours would grow in the ventricles of the brain before any symptoms of their presence were shown. In the majority of cases the symptoms set in suddenly after the Tumour had become large, and death soon ensued. He did not think that the cause of these Tumours was very distinctly understood. In two or three cases which had come under his notice the Tumours were largely made up of Cholerterin.

Prof. AXE then gave a very interesting and scientific lecture on the subject, "The Cow in Relation to Scarlatina of Man,"* in which, while recognising the interchangeability between the lower animals and the human subject of some diseases, such as Tuberculosis, Anthrax, Glanders, and Rabies, he disputed the conclusion to which Dr. Klein and others have arrived, viz., that the extensive outbreak of Scarlatina in the North-West district of London, in 1885, was due to the elaboration of the virus of Scarlatina in the systems of certain cows kept on a farm at Hendon; and he pointed out the much greater probability of the milk having been contaminated by human agency, especially as

* Professor Axe's lecture will be printed in pamphlet form at an early date.

some cases of Scarlatina were known to exist at that time in the immediate neighbourhood of the Hendon Dairy Farm.

In the discussion which followed, Mr. HUNTING said that the whole of Professor Axe's remarks went to damage that respect in which they indulged for pathology. He thought that there had lately been a tendency to overlook the importance of clinical work and to magnify the importance of laboratory proceedings. The whole clinical history of the Hendon cow disease, as shown by Professor Axe, pointed clearly to the disease not being communicable to man, and to the Scarlatina organism individualised by Dr. Klein not being an organism which produced any specific disease in the lower animals.

Mr. SAMSON did not believe that the disease of cows' teats produced Scarlatina in man. He had a great many times treated cows suffering from the eruption, but had never known cowmen or their children affected with Scarlatina from being in contact with the diseased animals or from drinking their milk.

Prof. CROOKSHANK said that he felt that the remarks which had been made with regard to the time and attention given to cultivating micro-organisms were quite justified. Those present might be surprised to hear this statement from a bacteriologist, but he could assure them that those bacteriologists who did not forget that they were also practical pathologists were very opposed to any researches which were not most thorough in all their details, and, moreover, admitted of repetition and demonstration in the hands of others. Bacteriology was of immense value as a part of pathology. In many diseases the pathogenic role of a micro-organism had been distinctly proved, but that was no reason why the germ-theory should be accepted for every communicable disease. He found there was a great tendency on the part of some investigators to rush into print, which was one of the easiest ways of gaining notoriety.

In a great many diseases, and, indeed, also in conditions of health, there are micro-organisms present on the skin and mucous membrane which, when isolated and cultivated, were capable of producing disease in the lower animals.

The announcement of the discovery of a new micro-organism was sometimes based upon insufficient research, and he was quite ready to admit that rushing to extravagant conclusions upon very slight evidence had brought genuine pathological work into discredit in the eyes of many eminent practical men.

No work could be accepted as genuine unless based upon the famous postulates of Koch, which were, firstly, that the organism must *always* be found in connection with the disease in the blood or in the tissues; secondly, that this organism must be cultivated apart from the blood or the tissues, and it must be carried through successive generations of artificial cultivations; thirdly, that the disease must be reproduced with inoculation of such a cultivation, and that in the disease thus produced the organism which was present in the original disease must again be found. When this chain of evidence is complete, then, and then only, are we justified in saying that the organism was undoubtedly the principal agent in the production of the disease in question; but if that chain of evidence was not completed, we are only justified in saying that the organism was associated with the disease. In conclusion, Dr. Crookshank invited Fellows of the Society to be present at a meeting of the Pathological Society on December 15th, when his report on the Milk-Scarlatina question would be read.

Mr. SHEATHER was very pleased that the question as to the value of the study of bacteriology had been introduced. In spite of the great harm which had been done by the injudicious and rash publication of so-called results which could not afterwards be verified, he had no doubt but that the

value of bacteriology in the diagnosis of disease would soon be generally recognised.

In answer to queries from Messrs. Wilson, Hunting, Raymond, and F. Smith, Prof. AXE replied, that in the several outbreaks of the cow disease to which he had referred, a number of the persons who were engaged in the milking became inoculated with the virus in sores on their hands such persons did not suffer from Scarlatina, but developed changes in the skin and fingers of the same nature as those which existed upon the teats of cows. This eruption was no new disease of the cow. He believed he had known it for many years, and had seen it in many counties. He (Prof. Axe) did not know Dr. Klein's reasons for not using the blood of Scarlatina patients for inoculating the experimental animals, but this void had been filled by the Edinburgh Commission, which did use the blood, so that altogether experiments had been conducted with the micro-purulent throat discharges, the cutaneous desquamation, and with the blood of persons suffering from Scarlatina, and neither of them seemed capable of producing in the animals inoculated anything which can be assimilated to Scarlatina.

The PRESIDENT proposed, and Mr. SAMSON seconded, a vote of thanks to Prof. Axe for his lecture, which was carried unanimously.

SIDNEY VILLAR, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE sixty-first meeting of the above Association was held at the George Hotel, Northampton, on October 14th, 1887.

Prior to the meeting the members were entertained at luncheon by Mr. T. J. Merrick.

Mr. J. M. Parker, President, occupied the chair, and there were present Professor Pritchard, London; Messrs. F. W. Wragg, London; R. G. Verney, Stratford-on-Avon; H. D. Pritchard, Wolverhampton; A. Over, Rugby; J. L. Barber, Rugby; Capt. Russell, Grantham; Messrs. T. Greaves, Manchester; T. J. Merrick and T. H. Merrick, Northampton; S. J. Marriott, Northampton; J. H. Reynolds, Daventry; H. Blunt, Lutterworth; W. Carless, Stafford; B. Freer, Uppingham; H. Olver, Tamworth; J. Wiggins, Market Harboro'; J. Malcolm, Birmingham; B. B. Aris, Wellingborough; and T. Chambers (Hon. Sec.), Dudley.

Visitors: P. A. Muntz, Esq., M.P., and Mr. Ewart Dunsmore, Rugby. Letters of apology were received from Sir Henry Simpson, Windsor; Professor Walley, Edinburgh; Messrs. J. L. Barling, Hereford; Martin, Chesterfield; J. G. Cross, Shrewsbury; F. Blakeney (Treasurer), Stourbridge; H. R. Perrins, Worcester; E. Price, Birmingham; and R. C. Trigger, Newcastle-under-Lyme.

The Hon. Sec. read the minutes of the last meeting, which were confirmed.

Mr. F. L. Gooch, of Stamford, Mr. S. J. Marriott, of Northampton, and F. B. Jones, of Leicester, were elected members of the Association.

The PRESIDENT called upon Professor Pritchard to deliver his lecture on "Sidebone."

The Professor said, with a view to leading his audience to the importance of his subject, he dealt briefly with that portion of the anatomy of the horse's foot involved more particularly with the malady he had selected for his lecture. He laid stress on the fact that although the pedal bone, with the lower half of the coronæ and the navicular bone, constituted the ossific basement structure of the foot, the lateral cartilages with their appendages entered very largely into the formation of such basement material of the organ, they forming more than one half of it. With the assistance of specimen, he showed that these structures extended very nearly as far forward as the

extensor pedis tendon, as far back as the extreme posterior part of the internal portion of the hoof, from an inch to an inch and a half above the hoof, and downwards to the internal surface of the horny sole. He then showed that these cartilages had some very important relations with other structures, and dwelt upon the fact that among other parts in apposition with and attached to them was very nearly the whole of the coronary secreting substance, the band from which the bulk of the wall or crust of the hoof is secreted—a fact to which, in his opinion, the shape of the foot was entirely due. Some of the other principal functions of these cartilages were then dealt with, and the Professor passed on to speak of the disease Sidebone.

Its pathology he described as a calcification or ossification of a portion or the whole of the lateral cartilages, and endeavoured to impress upon the meeting that the transformation of tissue, although very frequently extending from the alæ of the pedal bone in a direction upwards and backwards or forwards, not at all uncommonly commences near the centre, and in some instances in close proximity to the upper margin of the structure. He laid particular stress upon this point, more especially on account of the necessity of the practitioners bearing the fact in mind when determining as to the existence of Sidebone or otherwise.

The causes of the disease were next reviewed; firstly, dealing with the question of hereditary predisposition, and expressing a decided opinion that the malady was transmitted from the sires and dams to the progeny, supporting such opinion by quoting instances which had come under his notice, and drawing attention to the fact of the few cases of Sidebone seen in horses sent for exhibition at the present day, compared with the number which used to be met with in the show rings, when shows of cart-horses were first instituted some sixteen years since, and strict professional examinations made with a view to rejection of all unsound entries. He considered this measure imposed upon would-be exhibitors the necessity of a more careful selection of parent animals, and that, as a consequence, the production of a sounder progeny took place. He further stated on this point that he firmly believed that, if as much care were taken in the selection of the parent animals of cart-horses, as was observed in those of lighter breeds, Sidebones would be as rare in the former as in the latter. As another and not unfrequent cause of Sidebone—injury from external violence: a careless carter dropping the shaft of his cart upon the horse's coronet, a tread from the horse's other foot, or from another horse when working in pairs—in such way bruising and setting up inflammation in the tissues in connection with the cartilage. He pointed out that in this way the fact of a single Sidebone appearing far more frequently on the outer than on the inner side of the foot was to be accounted for. A very fruitful cause of Sidebone, drawn attention to, was that of concussion, produced by horses being called upon to travel on roughly-paved roads, or with improperly-adapted shoes, a cause more particularly in operation in horses with flat feet with low weak heels. It was pointed out that to the fact of the horses having mainly to be supported by the fore limbs, and they, consequently, subjected to a much greater amount of concussion than the hind, Sidebone is so much frequently found in the fore feet. On the question of the policy of breeding from a horse having a Sidebone caused by accident, the lecturer said that in his opinion if the affected state of the coronet was unquestionably the result of a local cause, it would be quite safe to breed from him or her; but that before such an animal were selected for the purpose, the cause of the Sidebone should be beyond all doubt.

The lecturer next dealt with the symptoms of the disease, pointing out that, of all others, the rigid state of that part of the lateral cartilage extending above the hoof was the diagnostic one; that in the majority of cases there was little difficulty in determining its existence or otherwise, although in some instances

where the base of the cartilage, in proximity to the wing of the pedal bone, was the only affected part, the matter of determining its existence was one of very considerable difficulty.

He advised that when being examined, the horse should be allowed to stand fairly upon his feet, so as to impart a proper amount of tension to the cartilages; pressure should then be applied with the finger and thumb over the region of the cartilage, to determine whether it possessed the normal amount of elasticity. He had seen persons examine by taking up the foot and testing the cartilage by moving it inwards and outwards, but he looked upon this as a very unreliable test, and backed up this view by reminding his audience of what he had said respecting the upper part of the cartilage, in many instances alone being ossified, and pointing out that in such a case it would readily move inwards and outwards, and consequently such an examination would be very much calculated to mislead. On the other hand, he deprecated having one foot held up while the other was being examined, considering that unusual weight imposed upon it is calculated to render the cartilages so tense as to cause the examiner to suspect that the base of one, or both, were diseased. Lameness was, he found, a very frequent attendant of the malady, more particularly in horses with weak feet, and a lameness which, owing to the nature of the affection, was very difficult to get rid of.

The cause giving rise to the lameness was next dealt with. It was pointed out that several opinions regarding it were held. Undue force upon the external surface of the cartilage, imparting unusual pressure to the laminae, an interference with the function of the structures in apposition with the internal surface of the cartilage, the unyielding condition of the cartilage, and others, had been advanced.

The lecturer held the opinion that the movement which took place in the posterior half of the foot, a movement which unquestionably occurred every time the animal's weight was placed upon it—not a lateral expansion, as taught years back, but one in a direction forwards and backwards, and a movement with which the elasticity of the healthy cartilages contributed largely to, was so seriously interfered with they could not properly perform their functions, and lameness was the result. The lecture was brought to a close by some general remarks as to the various modes of treatment which were had recourse to. It was pointed out that cure was impossible, and consequently that what was done in way of treatment was carried out solely with a view to relieve lameness; blistering, firing, the application of modified shoes, and neurotomy, were the various plans named as usually being had recourse to, and in some instances of bodily removal of the affected cartilages; but the lecturer was of opinion that, with the exception of neurotomy—the so-called high operation which he advised—in the large majority of cases treatment was not followed by the desired result.

A very animated discussion followed, in which Messrs. Greaves, T. J. Merrick, J. Malcolm, F. Wragg, Captain Russell, Verney, H. Olver, Wiggins, Blunt, A. Over, P. A. Muntz, Esq., M.P., and the Hon. Sec. took part.

Mr. OLVER proposed, and Captain RUSSELL seconded, a vote of thanks to Professor Pritchard for his admirable lecture.

Mr. WIGGINS proposed a vote of thanks to Mr. Muntz for his attendance that day, and for the valuable questions he, as a large breeder of horses, had asked.

Mr. OVER seconded the proposition, and it was unanimously agreed to.

Mr. MUNTZ in replying, spoke of the pleasure it gave him to be present at that meeting. His object in attending was to educate himself on the question of Sidebone, and he had received a great deal of valuable information from the address, and the discussion which had followed it. One of the

greatest difficulties the farmer who bred horses had to contend with was Sidebone, and if anything could be done by the veterinary profession to check its spread, they would be conferring a great boon upon the agricultural community. He was of opinion that Sidebone was largely due to locality, and he hoped that question would receive future consideration.

A vote of thanks to the Chairman was proposed by Professor PRITCHARD, and seconded by P. A. MUNTZ, Esq., M.P., and carried unanimously.

The Chairman having briefly responded, the proceedings terminated.

The members present afterwards dined together.

T. CHAMBERS, *Hon. Sec.*

SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE usual quarterly meeting of the Society was held in the London Hotel, on Wednesday, the 23rd November. The President, Mr. Burnett, of Maybole, was in the chair. There was a very fair attendance of members.

The minutes of the last meeting were read and confirmed.

Professor WALLEY proposed the following six gentlemen for election as members:—Messrs. Smart, Grossart, Gilchrist, Player, Young, and Reid. Seconded by Mr. A. BAIRD.

Mr. CUNNINGHAM, as an amendment, proposed that these young men be not elected until after the general meeting in February. He thought it was unfair to allow them to have a vote in the affairs of the Society at such a critical time. The Society had come to the parting of two ways, when it seemed impossible for it to exist in its present state. There were two distinct parties in the Society, and there were members enough on each side, in the event of a dissolution, to form two new Scottish Societies. While proposing this amendment, he would at the same time give notice of the following motion for next meeting:—

“That at the annual general meeting in February, 1888, this, the Scottish Metropolitan Veterinary Medical Society be dissolved; a small committee being first appointed, with powers to sell or dispose of the effects of the Society, uplift its funds, pay its debts, and hand over the surplus to the Veterinary Benevolent Fund, in the hope that, soon after the dissolution of this Society, two other fresh Scottish Veterinary Medical Associations will be formed.”

The motion and amendment were then put to the vote. Six voted for Professor Walley's motion, and seven voted for Mr. Cunningham's amendment. The latter was accordingly carried.

Professor WALLEY said he looked upon this as a deliberate and prearranged insult to himself and to the gentlemen he had proposed. In his experience of veterinary associations he had never known of a similar step being taken on the election of gentlemen as members, and looking at it in the light of an insult he could not remain in the Society. Professor Walley accordingly at this point left the meeting.

Professor WILLIAMS remarked, that so far from Mr. Cunningham's amendment and notice of motion being prearranged, he had not heard of them until that morning. He (Professor Williams) regretted that the President had seen fit to write a letter to the members putting the existing quarrel as a question between the two schools. He repudiated it as such, and asserted that it was a question between two persons.

The PRESIDENT said he was sorry Professor Williams had taken his letter up in that light, as he certainly did not intend it to be so read.

The election of office-bearers was then proceeded with.

Mr. CUNNINGHAM proposed Professor Lewis as President, seconded by Mr. BORTHWICK.

Professor LEWIS thought that an older member should take the responsibility at the present crisis, and he would accordingly propose that Mr. Borthwick be elected to the chair.

Mr. BORTHWICK declined to accept the position.

Professor WILLIAMS proposed the re-election of Mr. Burnett, which was, however, declined by that gentleman.

After a time Professor Lewis was persuaded to accept office.

The following gentlemen were elected Vice-Presidents :—

Mr. Borthwick, proposed by Mr. CUNNINGHAM, seconded by Professor LEWIS.

Mr. A. Baird, proposed by Mr. HUTTON, seconded by Mr. BARCLAY.

Mr. Aitken, jun., Edinburgh, proposed by Professor LEWIS, seconded by Mr. CUNNINGHAM.

Mr. Fairbairn, of Cupar, was elected Secretary. Proposed by Mr. A. BAIRD seconded by Mr. STORRIE.

The same gentleman was also elected Treasurer. Proposed by Mr. W. O. WILLIAMS, seconded by Mr. STORRIE.

The PRESIDENT next read the following paper on

Rheumatism.

GENTLEMEN,—I was requested by our Secretary to bring before this meeting either a paper or some interesting cases. I was afraid time would not allow me to prepare a paper, but as there was none forthcoming I have put briefly together a few remarks on Rheumatism, and at the end of which I will bring before your notice the history of a case connected with the same. Rheumatism is a word of Greek origin. The Greek word *rheumatismos* signifies a flux or looseness; *rheumatisomai*, to be affected with looseness—from *reuma*, a humour floating in the body causing disease.

Rheumatism may be defined to be an acute febrile disease, caused by certain morbid matters circulating in the system and climatic influences, and with severe pain in the articulations and fibro-serous membranes and muscles throughout the body.

The first question that naturally presents itself to us is, What is Rheumatism? Many attempts have been made to determine the exact nature of the *materies morbi rheumatici*. Various and conflicting are the opinions given by the leading pathologists of the past and present regarding the nature of this disease, which up to the present time have not been satisfactorily answered. Lactic acid, the nervous, infective, germ and malarial theories, and an excess of fibrin in the blood—hyperinosis, as it is termed—have each their claimants as being the cause of this disease. And the nature of the poison, if there be such, in the system is, in my opinion, still an open question.

I will now briefly bring before you the opinion of a few of the leading pathologists regarding the nature of this disease. Drs. Prout and Todd and many other leading pathologists believe it to be due to an excess of lactic acid in the system generally, and that the superabundance of lactic acid is caused by that ordinarily the starch of the food is first converted into lactic acid; this then combines with oxygen to form carbonic acid and water, which is excreted by the lungs, but, under conditions unfavourable to this oxidation, the lactic acid accumulates in the system. Dr. B. W. Richardson and Mr. Simon have proved by experiments that the injection of lactic acid into the system will produce symptoms of cardiac inflammation resembling rheumatic endo and pericarditis. But would not the injection of other acids cause the same thing? Dr. Garrod has failed to detect any morbid principle in the serum of the blood, and has generally found an absence of any specific alteration in the urine.

Canstatt and Seitz advance the nervous theory—that cold acting on the skin and joints causes disturbance of corresponding parts of the central nervous system, and this gives rise to pain and vaso-motor or trophic changes of the same peripheral parts, and to Fever.

Senator favours the combination of the lactic acid and nervous theory. He believes that cold acting externally causes retention of lactic acid in the system, and this acts on the central nervous system, and the disordered nervous centres react upon the joints, etc.

Hunter believes in the infective theory—that with a chill micrococci enter into the system, and Endocarditis is the result, and that the joint symptoms are secondary and embolic, as in Pyæmic Arthritis.

Salisbury favours the germ theory of the disease, and that it is due to a vegetable organism in the blood, *Synostosis translucens*.

MacLagan advances the malarial theory of the disease, and that it is due to a poison in the system of the nature of a miasm taken into the system from without, and that this miasm is generically allied to, but specifically distinct from, the miasm of Malarial fever.

Fuller believes that cold and other external agencies are only predisposing and exciting causes of Rheumatism, and that the primary, proximate, or essential cause of the disease is the presence of a morbid matter in the blood, generated in the system as the product of a peculiar form of malassimilation of vicious metamorphic action. The opinion is entertained by many leading pathologists that an excess of fibrin in the blood is in a great measure the cause of this disease, and that the excess is always antecedent to an attack of Rheumatic Fever, and I have no doubt but you can all testify to the fact that the attacks are most severe in plethoric animals, but still I am not inclined to think that the excess of fibrin is the cause of the disease.

I am inclined to believe in the opinion formed by Mr. Fuller, that the cold is the exciting cause, and that there is some morbid matter in the blood as the primary cause of the disease, but I think it is not essential to have malassimilation to produce this morbid matter in the blood. For instance, take a day in the month of April or May, with a hot sun and a cold dry air. Between the heat of the sun and hard work the animal gets very much heated, and the cold air, acting on the skin and articulations, prevents the perspiration with the morbid matter being thrown off by the skin as one of the three great emunctories of the body, and is therefore thrown back on the system; but still there is something required to produce the disease, and that is five or ten minutes' rest to allow the animal to cool down quickly; for what is more common than for a party to drive into town and stand for a short time in a draught? and then the animal begins to show signs of stiffness, and ultimately becomes so bad as to be unable to go home. But the same thing is to be seen oftener in the heavy breed of horses by being allowed to stand for a short time at the land end in the plough or some other agricultural implement. Or, for example, an animal is put into the stable at night very warm, and when he is seen in the morning he is unable to move out of the stall. Another peculiarity about Rheumatism attacking the horse is that the largest percentage attacked are of a dark-brown colour, a near approach to black, and the only reason I can advance for it is this—that they are less liable to perspire than any other colour. I have made inquiries of coachmen and others, and they endorse my opinion that this colour of horse perspires less than any other.

And we also find that certain years and seasons are more productive of Rheumatism than others, due, no doubt, to some peculiar atmospheric condition. And we also find a number of animals attacked at the same time, both horses, cattle, and dogs. I had this year at a gentleman's seat two carriage horses

and a dairy cow suffering from this disease all at the same time, likewise horses, cattle, and dogs in different parts of the district.

Without entering further into a speculative discussion concerning the different theories I have laid before you, I will leave it to you during the discussion which I hope will ensue to throw more light on the subject.

I will now draw your attention to the divisions into which Rheumatism may be divided; and I think, for all practical purposes, the most useful divisions are into acute, subacute, and chronic. To one of these the various tissues of the body affected may be referred, as the capsular, muscular, periosteal, etc. Rheumatism is also associated with some other diseases, as Influenza, Epizootic Cuiulitis, Azoturia, or Hæmoglobinuria, and Rheumatism following sprains, etc.

Symptoms of Acute Rheumatism.—Acute Rheumatism is ushered in by rigors or shiverings, followed by increased heat, frequent pulse, accelerated breathing, shifting of the limbs, or there may be stiffness of the neck or loins pain gradually increases, the animal begins to perspire, pains come in paroxysms, respirations more accelerated, dilated nostrils, and anxious countenance; pressure on the tendons of muscles, at the articulations, or wherever the disease is located, the animal evinces much pain. One joint, or several, or nearly every joint in the body may be affected; and in those cases where only one or two articulations are affected the disease generally exhibits a greater tendency to shift from joint to joint, or to the muscles of the loins, intercostal muscles, or to those of the neck, and to the heart itself. I witnessed a case where the heart was very early affected. On my arrival the horse had the skin opposite the heart torn off with his teeth. I turned him in the stall, and gave him a draught, and by the time I had given it to him the disease had located itself in his loins, and he was unable to come out of his stall. It was one of the most erratic cases of the disease I have observed, the pains shifting in such an incredibly short time. Sometimes we have a very high temperature in this disease. In some cases the bowels are confined; urine always scanty and high-coloured. And such are the principal symptoms of the acute form of this disease.

Subacute Rheumatism may occur primarily, or it may be a sequence of the acute. In whatever form it occurs the symptoms are of a less intense character than the acute, and are seldom ushered in by rigors or chills; the fever is less marked, and the disease is of much shorter duration, lasting only a few days in the majority of cases. The pain may fly from joint to joint, and to the aponeurotic expansion of muscles and coverings of the brain, as in the acute form of the disease. In a few words I may dismiss subacute Rheumatism by saying it is a modified form of the acute.

Chronic Rheumatism may occur either as a primary disease from the same causes which produce the other forms, or it may be the sequel of the acute or subacute form, or it may arise in some cases from sprains. In this form of the disease the pain is less severe but more fixed in the parts first affected, and does not exhibit the same metastatic tendency as in the other forms.

The inflammation in the articulations is more difficult of removal, and is very prone to lead to ulceration of the cartilages, eburnation of the bones, and ankylosis of the joints, and deposits of bony excrescences in the synovial membranes, and also in the occipital, cervical, dorsal, lumbar, and pelvic regions; and in many cases enlargement and distortion of the joints. Such are a few of the characters of chronic Rheumatism.

Treatment of Acute Rheumatism.—There are various theories advanced for the cure of this disease, and it is very difficult to estimate the relative and absolute value of the different measures proposed for the treatment of this disease, as it differs in its degree of intensity, also in its duration, and with

its variety of complications. I will now briefly enumerate a few of the methods of treating this disease, without entering into a discussion of their relative merits.

An early abstraction of blood was the practice resorted to by our ancestors, and which at that time was the cure for almost every disease. Bleeding still has its advocates, who believe that the character of the pulse, the extreme febrile symptoms, and the extra amount of fibrin in the blood demand it.

Some, again, adopt the purgative plan, giving also nightly small doses of calomel, colchicum, ipecacuanha, tartar emetic, and aloes, and occasionally opium, followed by salines in the morning.

Sir William Gull advocates the expectant method of treatment, to trust entirely to warmth, and good nursing and rest, and small doses of opium to complete this effect, and to do wholly without other medical treatment.

Some others advance the theory that this disease is only a phase of indigestion, and that it is to be cured by fasting, and by giving complete and continued rest to all the viscera.

The treatment adopted by Dr. Herbert Davies and other physicians consists in applying strips of cantharides plaster near every affected joint. Dr. Davies prefers good acetum lyttæ well painted in zones round the joints and close to the inflamed parts, as it gives less pain to the patient than the emplastrum lyttæ, and vesication takes place with less inconvenience to the patient.

(1) Dr. Davies states that if this blister treatment be adopted early, and before any physical signs of endo or pericarditis are developed, it saves the heart in a large number of cases from inflammatory mischief.

(2) That relief to the local pain is rapidly and permanently obtained.

(3) That the temperature falls quickly, and the frequency of the pulse is diminished, and the altered reaction of the urine.

(4) Convalescence is quickly established, as shown by the early return of the appetite.

(5) The mode of treatment, though bold, energetic, and decisive, is not remarkably painful or to be dreaded, as proved by the evidence of the patients who have been subjected to the plan.

Dr. Davies considers that it is in acute Rheumatism that the blister treatment answers best, and where a large number of joints are affected at the same time, and where, by a large discharging surface, the major part of the poison can be removed at one stroke, as he considers that the rheumatic poison is especially abundant in the neighbourhood of the joints, and is actually separated with the blister serum, and so removed from the body.

The treatment of salicin, salicylic acid, salicylate of soda, and antipyrin are the favourite medicines at present used in medical practice, and I believe have also been highly spoken of by some of our own profession. Of the salicylates, salicylate of soda is the most extensively used by medical men. One thing in its favour is that it is easier dissolved, and it is claimed for it that it prevents vegetation on the valves of the heart; but, on the other hand, salicin is said to be less liable to produce toxic symptoms, but all the salicylates are liable to do so, and if they are to be discontinued the Rheumatism is apt again to return as severe as at the first. Dr. Davies says (1) that antipyrin is as efficacious as the salicylates, while less nauseous and less liable to cause uncomfortable symptoms; (2) that it acts best in acute cases; (3) that besides its antipyretic action it directly reduces the pain by its influence on the nervous system.

The treatment of Rheumatism by salicin and its preparations, when first introduced into medical practice, was thought to be something new. You are all aware salicin is got from the bark of the willow *Salix alba*, although salicin and its preparations are new to medical practice, but ages

before the efficacy of the bark of the willow was known to Dioscorides, the Anazarbian philosopher, who flourished in the reign of the tyrant Nero. It may be interesting to give a quotation from Gerarde, the father of English Botany, who flourished in the sixteenth century, concerning the virtues of willow bark :—

“The barke hath vertues ; Dioscorides writeth, that this being burnt to ashes and steeped in vinegar, takes away cornes and other like risings in the feet and toes ; divers, saith Galen, doe slit the barke whilst the Withyis is flouring, and gather a certain juyce (salicin) with which they vse to take away things that hinder the sight, and this is when they are constrained to vse a cleansing medicine of thin and subtile parts.”

I remember, when salicin was first introduced into practice, reading a letter in the *Lancet* from a medical practitioner in India, who recorded a case he had there. He visited the wife of a Dutch Boer at a considerable distance, and found her suffering from Rheumatism, and for which he prescribed his usual remedies. A length of time afterwards she appeared before him in his surgery in excellent health, and he was congratulating her on the good recovery she had made under his treatment, but she said her recovery was not due to him, as she had derived no benefit from his treatment, but an old Hottentot, who had seen her, made an infusion from the bark of the willow, and from using this infusion she made a rapid recovery.

Previous to the treatment by the salicylates, alkaline treatment was held in great repute, and is still so by many of the medical, and I believe by the majority of veterinary, practitioners. I will now briefly put before you the treatment I have found most beneficial in my practice.

The first thing I do when called upon to treat a case of Rheumatism is to make arrangements for the nursing of the animal, and get some one that can be relied upon to attend the same, and the animal should be put into a stall free from any draught, in preference to a loose-box, as I prefer the patient not to be moved, and the animal to be carefully bedded, and clothing sufficient not to be oppressive, and to be of such a nature as will readily absorb the sweat.

Medicinal Treatment.—If the bowels are not constipated, I prefer giving no purgative medicine, as it is apt to injure the appetite ; and if I should give any, I prefer aloes. Morning and evening I give the following powder :—

R̄. Pulv. Calumbæ,
 „ Potassæ Nitratis āā ʒvj.
 „ Digitalis, ʒij.

And I also give pot. nit. ʒj at noon, either in a mash gruel or water.

I have also tried one of the following powders in the evening, in place of one of the foregoing :—

R̄. Pulv. Chirettæ.
 „ Potassæ Bicarbonatis, āā ʒvj.
 „ Colchici, ʒj.

And if pain should be excessive, I give opium combined with calomel.

Local Treatment.—I make a special tincture of arnica for external use. I take of the powdered root of arnica ʒxij, and spt. vini meth. Oiv, and macerate for a week or more. And I make a liniment according to the following formula :—

R̄. Tr. Arnicæ, ʒvj.
 Spt. Vini Meth., ʒij.
 Zinci Sulphatis, ʒij.
 Aqua ad ʒxxiv.

And if pain should be very severe, I add ext. belladonnæ ʒiij to the foregoing liniment.

My directions for its use are:—Put on as much as to have the hair soaking wet, and to be hand-rubbed till the hair be perfectly dry; and the liniment to be applied every three or four hours, according to circumstances. I may add I have had excellent results from this liniment. I will record a case of recovery that happened accidentally in the human subject. A ploughman came to me requesting that I would give him a bottle of the same liniment for his shoulders which he had been rubbing on a horse I had attended. I said I was very doubtful of the efficacy of the liniment in the human subject, but I was willing to let him have it for a trial. He assured me there was no doubt about it, as he had had Rheumatism in his hands for two years, and that they were entirely better by rubbing the liniment into the joints of the affected animal; and I am happy to state his shoulders were cured, and a great many have been benefited by the same. My treatment for the subacute form of Rheumatism is the same as for the acute.

Treatment of Chronic Rheumatism.—In some cases I use the same remedies as in the other forms, and when it does not yield to these I have used calomel, pot. iodide, pot. bromide, arsenious acid, and other tonics. Locally I have used lin. camph. co., iodine, and cantharides blisters.

I will now give you the history of what I suppose to be a peculiar case of rheumatism affecting the meninges of the brain. On the 10th December, 1885, I was called to see a horse that had got his hocks damaged from having run away in a cart, the wheels having come off, and as soon as he was got hold of he was put into another cart and worked for a few hours. I found the hocks slightly bruised, somewhat swollen, with some degree of stiffness. I administered a purgative, and left for him some diuretic medicine, and ordered hot fomentations and rest. He got all right in a short time, and as he was not required got plenty of time to rest. I was again called to see him on the 5th January, 1886, he having never been out of the stable. This time I found him suffering from Rheumatism in both hocks. I prescribed for him my usual treatment, which I have already brought before you; two days afterwards he was observed to sweat at the hip-joints, and he was rubbed there also with the liniment. A few days after this he began to sweat along the abdomen, and about this time the pain and stiffness had left him; next he began to sweat at the withers. There was nothing further presented itself for some time, except that the hock-joints remained much swollen, for which I prescribed an iodine liniment, to be rubbed on occasionally. I was called again to see him on the 14th February, and was told he had been put into the plough, and had gone well for the first two rounds, and after that they said he was like an animal insane. When he came to the land end he would canter round in a peculiar fashion, and when ploughing would draw in a cantering manner and would have drawn untill he hanged himself; and they were very glad to get him unyoked. This was the first time they had observed he would not set back. I found him this time presenting to all appearance an animal in perfect health; pulse and temperature normal, neither pain nor stiffness, taking his food well, and would look round in quite a natural manner. The only thing observable about him, he was sweating along the top of the neck and at the root of the ears; and I found on trying to set him back in the stall, it was impossible to do so; and the more one tried to do so the more he pressed his head forward into the corner. Again, at other times, when trying to set him back, he would get quite wild, while at others he would shake and tremble, as if afraid. Another peculiarity about him, if the head collar was taken off him, and left to himself, he would set back quite natural and walk about the stable; but the moment you caught him he would make a rush for his stall and thrust his head into the corner. I now changed my treatment, prescribing calomel for him at one time, and pot. iod. at another, and from which he appeared to be

deriving no benefit. On March 3rd I gave him a physic ball, and prescribed pot. bromide and tonics. After following this treatment for some time he was found loose in the stable one day, and to all appearance he seemed better than usual; and they had him led out of the stable, and all went well enough for a short time; but as soon as the exercise increased the circulation the old symptoms returned, and he would have walked through a hedge, against the side of a house, or anywhere else, and it was with difficulty they had him led into the stable. I called shortly after this, on the 19th March, and prescribed eight powders of chiretta, pot. nit. and digitalis, one to be given daily, and he had no more medicine until I again saw him on the 7th April. By this time I was beginning to despond of effecting a cure, and had now thought of blistering him behind the ears. I thought, in the first place, I would try the B. P. tincture of arnica internally, and which he commenced to get in zj doses three times daily, and I was gratified to learn that on the third morning from the commencement of this treatment they found him quite pliable to set back in the stall; and they had him taken out and gave him a little exercise. I continued the arnica treatment for a few days longer, and he was at work the first week in May, and has remained in perfect health ever since, and is still working on the same farm.

An interesting discussion followed, which was taken part in by Professor Williams, Mr. Cunningham, and Mr. Cameron.

Mr. CAMERON described a case of rupture of the rectum and passage of a calculus into the peritoneal cavity. The same gentleman also described some cases of Braxy and the supposed prevention by eating fir-tops.

Mr. FAIRBAIRN read the following communication on

Vomition in a Horse.

MR. PRESIDENT AND GENTLEMEN,—If it is not presuming too much upon your time, I will make a few remarks on a case which came under my observation lately.

The subject was a bay cob eight years old, used for harness work, rather thin in condition, which state he had been in for some time; had had frequent attacks of Colic, for which I had attended him, his coat always staring more or less.

On this particular occasion the animal had a visit from his old enemy two days previous to my being called, and was treated by his owner, and seemingly had got over it. He, however, would not eat, seemed very listless and dull, and now and again would try to vomit. This was the message sent to me, and to come out and see him.

On my arrival the following symptoms presented themselves:—The horse was standing, resting his head on the manger, nose protruding, shivering, respiration hurried, pulse 80 per minute, heart's action very weak, rectal temperature normal, persistent jumping of the jaws, and now and again he would pat with his fore feet, and when doing so he seemed to suffer great pain, the muscles of the neck twitching rapidly.

I offered him water to drink, which he partook of greedily, swallowing three or four gulps. This at once excited the involuntary action; he rose on his hind legs, struck out with his fore feet, gave a loud scream, opened his mouth, and ejected the lately-swallowed liquid, chiefly through his mouth; the head was slightly drawn downwards, and the muscles of the neck seemed to contract actively.

All this was at once produced on giving him water or gruel, which he would take at any time, always producing the same symptoms.

I had seen a horse during the act of emesis before, but never did I witness

such intense agony as this poor brute evidently suffered. If ever I wished to relieve animal pain it was at that moment, but somehow I felt that I had before me something out of my control. I could distinctly recognise that haggard and anxious expression of countenance in his face which to us means dissolution, an expression once seen not easily forgotten, but which is very difficult to describe. I diagnosed the case as one of Œsophageal Obstruction, and thought at the same time the obstruction would probably be found at the cardiac orifice of the stomach. I could not detect any swelling down the course of the food-tube, but heard distinctly gurgling sounds proceeding therefrom. On inquiry, I elicited the animal had had nothing to eat but corn and hay. Had been doing his usual work up to the day he took Colic (two days previously).

I thought it right to pass the probang, which I did. It slipped easily down, encountering no obstruction whatever. On withdrawing the tube I observed it covered with egesta, milky-white, and which appeared to be masticated hay. I now offered him a drink of gruel, when the same agonising symptoms occurred. You will observe that medicine given by the mouth would produce the same condition. The horse was comparatively free from pain except at intervals, and that of short duration. I ordered, and soon applied, woollen cloths wrung from hot water.

My prognosis was very unfavourable. Indeed, from the first time I saw him I could see he was on his last journey. He succumbed next morning.

I made a *post-mortem* examination, and found the following:—

The *stomach* contained some semifluid material of a greenish colour, and in the cuticular portion I could discern three indentations about three-eighths of an inch in diameter, round in form. They did not penetrate deeply. These I took for ulcers. Their edges were injected, and a very little raised from the surrounding tissue. The mucous membrane over that portion of the organ showed every sign of inflammatory action. The liver was very much enlarged, of great weight. It felt firm, and when cut into, the cut surface was glistening and dry. The gland was not uniformly affected, some parts of it more easily broken down than others. I had a year before this thought this horse's liver was the seat of structural change, and consequently was not surprised to find that condition to exist. My anticipation was verified, and went a long way to account for the general unthriftiness of the animal.

I find it not uncommon in making *post-mortem* examinations of horses this condition of the liver, and what I believe to be called albuminoid or lardaceous liver.

In the Œsophagus we found a great change, and a rather peculiar state of matters. The tube was very much enlarged—I should say three or four times its normal calibre. The dilatation commenced just as the tube passes through the diaphragm, and extended twelve or fourteen inches upwards; beyond and below that everything appeared normal. In the dilated portion was found egesta of a solid and semisolid consistence. The diseased portion of the tube began and ended with a distinct line of demarcation, and looked as if it had been crushed and bruised all over. I could detect nothing like stricture.

These, gentlemen, are the few hurried notes I collected with regard to this (to me) interesting case. It is certainly one the nature of which we do not meet with often.

I only ventured to bring this case before you in the hope of getting information, as I know that idiopathic disease of the Œsophagus is rather rarely met with. Is it possible that the case was one of *paralysis* of that part of the canal, the food lying there acting as an irritant, producing the dilatation, effusion, red, green, and black colours of the membrane?

After the discussion which followed, Professor WILLIAMS proposed a vote

of thanks to the President for his paper and for his presence in the chair, and to Messrs. Cameron and Fairbairn for their communications, seconded by Mr. BAIRD.

This concluded the business of the meeting. ARCH. BAIRD, *Hon. Sec.*

ARMY VETERINARY ASSOCIATION.

A MEETING of the above Association was held in the Army Veterinary School on the 19th October, when a very interesting and instructive paper, by Veterinary Surgeon First Class F. Duck, A.V.D., and Veterinary Surgeon First Class F. Smith, A.V.D., was read on "Veterinary Experiences in the Armies of France, Germany, and Belgium."

PATHOLOGICAL SOCIETY OF LONDON.

THE SO-CALLED HENDON COW DISEASE AND ITS RELATION TO SCARLET FEVER
IN MAN.

AT a special meeting on the 15th December, the following discussion took place on the above subject, introduced by a paper by Professor E. Crookshank, which is published elsewhere.

Professor BROWN desired to state the position which he occupied with regard to this inquiry. When Mr. Power's report concerning the Hendon Cow Disease appeared, he criticised his conclusions on the same basis as those of any other documents which came under his notice. He found that that report was based on negation. There was absence of any evidence of contagion by human agency. If the human contagium had presented itself, Mr. Power's postulates would never have been drawn. Was it more probable that there was an undiscovered source or human contagion than that the cow herself had developed something in her system which could give rise to human Scarlatina? It had been hinted that there was some friction between the various Governmental departments, but so far from that being the case he was willing, with the sanction of the Lords of the Council, to place the whole of the resources of the Agricultural Department at the disposal of the Medical Department and of the profession generally for the purposes of this investigation. Mr. Power's report had inflicted a shock on the dairy interest, and as a result he had directed the present investigation. After a great delay he was able to get intimation of several outbreaks of the disease. The cause of the delay was partly the fear of giving information after the publication of Mr. Power's reports, and partly the fact that the veterinary surgeon rarely heard of the outbreak, the farmer simply coming to him for a pot of ointment to treat the sore teat. That the disease was looked upon among farmers as of no account was shown by the fact that the affected cows sold in the market at a fair price. A few brought to the metropolis with the disease had been slaughtered, but the majority went to mix with other herds in various parts of the country. The pock which developed on the teat was "spoilt" by the handling of the milkers, and developed into a filthy sore. In some six or seven outbreaks during the last two months (for it was very prevalent at the present time) this eruptive disease of the teat had not been coincident with Scarlatina; this might be only a singular coincidence. He did not profess to connect this disease with the Hendon Cow Disease, for he never saw the later. Recently 604 cowsheds have been inspected in the metropolis, and over 9,000 cows examined, but no eruptive disease had been discovered. His experience was that in rural districts dairy farms were often very dirty, whilst dairies in town were, as a rule, patterns of neatness and cleanliness. On the bacteriological aspect of the question he was silent, but he was unprepared to hear that this disease was really Cow-pox. It seemed desirable, from his point of view, that it should be put under the Con-

tagious Diseases (Animals) Acts, which would make it an offence to sell milk from a disease animal.

Dr. BUCHANAN said that Professor Brown seemed to take it for granted that, given two febrile diseases, each associated with a micrococcus presenting certain characters in nutrient material, the two diseases must be the same. Professor Crookshank and Professor Brown had never seen one of the diseases they affected to diagnose, and the unity of the affections had been affirmed on resemblance of some only of the characters, not all. In the Hendon cases results of the *post-mortem* examinations had been recorded, but they had heard nothing of the necropsy of Dr. Crookshank's case. His conclusion was that Professor Crookshank was in possession of some curious cases of Cow-pox arising apparently spontaneously, and the result of inoculation into human beings would be awaited with interest. He supposed there might be some varieties of this disease called by Professors Brown and Crookshank *the disease*.

Dr. KLEIN said that Professor Crookshank had compared the disease he had seen with the outbreak at Hendon on the strength of Dr. Cameron's report, but that account was based on information derived from a variety of people in different localities. Dr. Cameron says that he is informed that human inoculation has happened, but this did not occur at Hendon, for there was not a single case there of infection of a milker, and there was no fever, no primary eruption, and no vesiculation. The ulcers and sores observed on the Hendon cows were different from those on the cows from Professor Crookshank's investigation which had been placed at his disposal. The ulcers in the Hendon cows were deeper, smaller, and healed up more rapidly; in eight or ten days the crust was gone. In the Wiltshire cows there were large, irregular superficial ulcers; there was no "substance" in them, merely a slight granulating surface underneath the scab. A cow sent from Edinburgh had in its lesions greater similarity with the Hendon than with the Wiltshire cows. The milk from the herd of Edinburgh cows had been supplied in a district in which between forty or fifty people had been attacked with sore-throat and fever. In regard to the organisms, he was surprised that Professor Crookshank said that these microbes, because they appeared to agree in certain particulars, were therefore the same thing. It was too short a time yet to judge of these differences; one would be found to grow a little slower, the colonies were a little smaller, and there were other small differences. As an illustration of this he would quote the micrococci of Septicæ, Scarlatina, Erysipelas: all behaved much alike in cultivations, but on inoculation the Septicæmic organism at once differentiated itself. There were many streptococci which, similar under the microscope, differed in rate of growth, size of colonies, opacity or translucency, and behaviour in different cultivation media. He could say positively that the organism from the Hendon Cow Disease was not the same as the organism from Professor Crookshank's cases. From cow No. 1, which had a mammary abscess, he got an organism which he planted in agar-agar, Brand's extract, and peptome mixture, but it refused to grow; whereas, the organism from the Hendon cows grew readily in such a mixture. Then, again, cow No. 1 had no visceral lesions; whereas, in the Hendon cases there was Lung, Spleen, and Kidney Disease. Professor Crookshank's cases looked much like real Cow-pox, and were most probably so; his pictures corresponded to Ceely's figures, and it would be interesting now to test and see if the calf would not take animal vaccine. Dr. Klein quoted an instance in which two horses were affected with a disease which looked like Variola Equina; the eruption healed and left no pitting. One of the grooms developed a vesicle on his thumb. Inoculation of lymph from this vesicle did not produce Cow-pox in calves, ponies, or donkeys. It was therefore a disease which only resembled Variola in some particulars. So in the present instance, though

vesiculation and ulceration were present, inoculation alone would prove the affection to be true Cow-pox.

Professor CROOKSHANK, in reply, said he had not personally observed the Hendon Cow Disease, and Dr. Klein who had made the *post-mortem* on the first of his cases had already told the result. His own account had followed as closely as possible Dr. Klein's narrative of the Hendon Disease. He had said that the microscopical appearances and characters on cultivation were identical with those of other streptococci. To his mind the evidence put forward by Mr. Power was a clever hypothesis, and Dr. Klein, by introducing the organism, had made that hypothesis a working one. He had yet to study the effect of inoculation in animals. He had succeeded in growing the organism in agar-agar and in broth. He regretted that no drawing had been published of the original Hendon Disease. On the farm from which his cases were drawn were eleven milkers; four old men had had the disease before, and did not contract it again; the other seven were lads, and had all contracted it. He would be glad to give all who were interested in the subject every opportunity of working at it. If Dr. Cameron's report did not refer to the Hendon Cow Disease, he thought some official statement to that effect should be made by the authorities of the Local Government Board.

Sir JAMES PAGET felt sure that in the future the disease could not well be overlooked. There was a great necessity that diseases in the cow should be studied by careful pathologists, and Mr. Ceely's papers and drawings would yield most valuable material for the investigation, and were deserving of the closest study.

PATHOLOGICAL SOCIETY OF LONDON.

BONE AND JOINT DISEASE IN ANIMALS.

MR. BLAND SUTTON showed some specimens of Bone and Joint Diseases. The first was the tibia and fibula of a horse, which three months before its death was kicked by a horse on the inner side of the leg over the tibia. There was a skin wound as the result of a kick, which healed quickly, and with trifling suppuration. As soon as the wound healed, the tibia began to enlarge, and continued to do so for three months; the horse suffered considerable pain, and as the case seemed hopeless it was killed. The condition of the tibia is interesting. The bone is three times larger than it should be, and its exterior is roughened by small bony outgrowths. On section the outline of the original shaft can be defined, and outside this a large mass of new bone has been deposited; this new bone has surrounded the slender fibula, but the new formation of bone is strictly limited to the tibia. The second specimen was a greatly enlarged femur from a monkey; the bone was so extremely soft that it was divided easily with a knife throughout its length. The section is very instructive; lying in the centre is the true shaft of the femur apparently necrosed, but embedded and closely adherent to new bone, which surrounds it evenly on all sides. The adventitious bone exceeds the original shaft three times. The new bone is roughly limited above and below by the epiphysial lines; hence, though the shaft is so thick, the condyles and head of the bone preserve their proper proportions. Both femora and one humerus were affected; the remainder of the skeleton seemed normal. The tibia of the horse and the femur of the monkey were shown, because it seemed possible that they represented early stages of a rare condition described in man as Necrosis without suppuration—quiet Necrosis. The third specimen was the elbow-joint of a lion twelve years old, affected with Osteo-arthritis. The cartilage had in a great measure disappeared from the joints, and the cartilage at the periphery of the articular surfaces was distinctly "lipped"; the synovial membrane presented villous fringes of great length, and lodged in the recesses of the joint were those cartilaginous bodies so common in this affec-

tion in man. All the joints of the fore-limbs of this lion were similarly affected. The fourth specimen was a typical example of the condition to which the apt and expressive term "*Lipoma Arborescens*" (Muller) is applied. The specimen came from the shoulder-joint of an old man affected with Osteo-arthritis, and all stages, from simple villous processes of the synovial membrane to pedunculated masses of fat, can be clearly recognised.

Dr. NORMAN MOORE had never seen lemon-seed bodies nor lipomatous fringes in genuine gout.

Mr. GODLEE asked whether the epiphysial lines in the monkey's femur were not a little rachitic.

Mr. W. ADAMS agreed with Dr. Moore.

Mr. R. W. PARKER alluded to a specimen of Central Necrosis in children, in which a condition of chronic Osteitis obtained in the tibia.

Sir JAMES PAGET referred to a case of traumatic injury to the tibia which in the course of fifteen years had developed into a condition of genuine chronic Osteitis, presenting a spongy, light, and porous texture, the other bones not being affected.

Mr. EVE said that a dry form of Caries might explain such a condition, and due to injury.

Mr. BLAND SUTTON said that the lower epiphysial line was undoubtedly enlarged, but not like that seen in other cases of Rickets, where many bones were affected.

ONTARIO VETERINARY COLLEGE.

THE Christmas examinations of the students attending this College were concluded on December 21st, before the official Board of Examiners. The tests applied to discover the amount of knowledge possessed were practical and thorough, the whole inquiry was conducted with care, and the results were satisfactory. Twenty-four gentlemen succeeded in passing the examination, while a few were relegated to their studies for another term. The names and residences of the successful candidates are as follows:—
G. Baxter, Michigan, U.S.; W. F. Broad, Sonya; W. H. Clapp, Dresden; H. Cooper, Davisville; C. O. Collins, Obolds, Pa., U.S.; R. C. Coates, Bothwell; W. H. Carpenter, Holly, N.Y., U.S.; E. E. Cunningham, La Porte, Ind., U.S.; H. Dean, Tavistock; W. A. Ewing, Newmarket; W. M. Evans, Simcoe; W. H. Huck, Mildmay; M. Kannon, Montreal, Que.; W. A. Kumpf, Waterloo; S. P. Kintner, Wooster, Ohio, U.S.; O. M. McMurray, North Baltimore, Ohio, U.S.; C. L. McLaren, Highgate; J. H. Oyler, Harrisburg, Pa., U.S.; F. Pike, Toronto; W. Shillinglaw, Staffa; R. W. Story, Princeton, Ill., U.S.; B. Taylor, Hillsborough, Dakota, U.S.; W. Thomson, Orillia; R. J. Walker, Clogher, Ireland.

G. E. Bracken, Primary on Materia Medica; R. J. Widdifield, Primary on Materia Medica.

J. H. Teller, Primary on Anatomy.

EXAMINATIONS OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

AT a meeting of the Court of Examiners of the Royal College of Veterinary Surgeons, held in London on and between December 15th to 23rd, the following students from the Royal Veterinary College were admitted members of the profession:—

Mr. H. F. Reynolds	...	...	St. Albans, Herts.
" G. F. Brown	...	...	Hemel Hempstead, Herts.
Hon. H. F. Sugden	...	...	Bowes Park, London, N.
Mr. R. B. Aulton	...	...	Derwent-street, Derby.

Mr. W. J. Wagstaff	...	...	Stoke-on-Trent.
" W. J. Moran	...	...	Downpatrick, Co. Down.
" H. Lukes	...	...	St. Austell, Cornwall.
" J. W. Crowhurst	...	...	(Not yet complied with Rules of College.)
" T. Spencer	...	...	(Not yet complied with Rules of College.)
" J. L. Perry	...	...	Cardiff.
" J. S. Channon	...	...	Shooter's Hill.
" G. Reddish	...	...	London.
" F. B. Drage	...	...	Brampton Grange, Northampton.
" J. F. McClean	...	...	Belgravia, London, S.W.
" W. T. Edwards	...	...	(Not yet complied with Rules of College.)
" J. E. Allen	...	...	Balham, S.W.

The following passed their Second Examination :—

Mr. J. H. Bell.	Mr. F. J. Tucker.
" T. Yarwood.	" C. M. Seeley.
" C. F. Hulford.	*" J. A. Fryer.
" R. L. Crauford.	" R. C. Bullen.
" A. Macvisie.	" J. E. Shoolbraid.
" J. B. A. Hare.	

The following passed their First Examination :—

Mr. E. R. Edwards.	Mr. C. B. Harris.
" D. C. Clinchy.	" H. H. Hide.
" B. P. Boyle.	" P. W. Creagh.
" J. F. B. Moody.	" A. Perkins.
" W. C. Quinnell.	" H. J. R. Pope.
" F. H. Jenkins.	†" T. Stevens.
" F. Gale.	" H. J. Farnham.
" A. H. Jones.	" A. E. Roberts.
" W. N. Wright.	*" A. S. Westworth.
" S. L. Boyd.	" J. W. Hopkins.
" H. P. Turnbull.	" E. J. Porter.

Marked thus * passed with great credit.

" † " very great credit.

ARTHUR WM. HILL, *Secretary.*

At meetings of the Scottish Section of the Board of Examiners, in Edinburgh and Glasgow, on and between December 23, 1887, and January 5th, 1888, the following gentlemen passed their Final Examination, and were admitted Members of the Royal College of Veterinary Surgeons :—

New Veterinary College.

Mr. H. G. Weatherall	...	...	Allahabad, India.
" J. Aitken	...	...	Loughborough, Leicestershire.
" J. J. Toussaint	...	...	Milwaukee, U.S.A.
" P. Young	...	...	Newport, Fifeshire.

Dick College.

Mr. James Whyte	...	...	Nairn.
" John Kelly	...	...	Cashel, Tipperary.
" J. W. Logan	...	...	Cork.
" T. Daly	Salines, Kildare.
" J. Pottie	Paisley.

Glasgow College.

Mr. J. McLean	Ligoniel, Co. Antrim.
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The following passed their Second Examination :—

New Veterinary College.

Mr. F. W. Cosgrove.	Mr. C. A. Szarbinowski.
„ J. D. Baker.	„ W. Schorn.
„ W. A. McDougal.	„ J. P. Isherwood.
„ J. Lindsay.	

Dick Veterinary College.

Mr. J. McGregor, G.C.

Glasgow Veterinary College.

Mr. H. J. Windsor.	Mr. H. Munro.
„ C. B. Freeman.	„ R. Anderson.

The following passed their First Examination :—

New Veterinary College.

Mr. J. Halliwell.	Mr. L. Browne.
„ E. Burton.	„ J. W. Turner.
„ D. McGregor, G.C.	„ O. A. Ducksbury.
„ T. Jowett.	„ R. J. Bushnell, G.C.
„ W. G. Senior.	„ H. Heap.
„ H. T. Bellingham.	„ D. McCartie.
„ G. H. White.	

Dick Veterinary College.

Mr. E. Goodman.	Mr. E. Carroll.
„ P. A. McDonald.	„ C. Byner.
„ H. W. Squire.	„ J. Peddie, V.G.C.
„ T. Aitken.	„ E. Gray, G.C.

Glasgow Veterinary College.

Mr. J. K. Thompson.	Mr. A. Campbell, G.C.
„ T. Jarvie.	„ A. Miller.
„ C. T. Holmes.	„ H. Anderson.
„ W. S. Lewis.	

R. RUTHERFORD, F.R.C.V.S.,
Secretary Board of Examiners.

Edinburgh, Jan. 16th, 1888.

THE NATIONAL VETERINARY BENEVOLENT AND MUTUAL
DEFENCE SOCIETY.

THE VETERINARY MUTUAL DEFENCE FINANCIAL STATEMENT,

From January 1st to December 31st, 1887.

CASH RECEIVED.			CASH PAID.		
1887.	£	s. d.	1887.	£	s. d.
Balance in Bank, January 1st,			Dec. 31, Secretary's expenses ..	0	10 6
1887 ..	326	8 8	„ New Receipt Book ..	0	6 6
Cash in Treasurer's hand ..	2	0 0	„ Wrappers for Notices and		
Subscriptions in 1887 ..	55	18 6	Receipts, etc. ..	1	9 0
Bank Interest, June ..	2	11 5	„ Cash in Bank ..	382	3 10
Bank Interest, December ..	3	3 9	„ Cash in hand since put		
			into Bank ..	5	12 6
	£390	12 4		£390	2 4

Audited and found correct,

January 11th, 1888.

JNO. B. WOLSTENHOLME.
THOMAS GREAVES, *Hon. Treasurer.*

THE NATIONAL VETERINARY BENEVOLENT FINANCIAL STATEMENT,
From January 1st to December 31st, 1887.

CASH RECEIVED.			
1887.	£	s.	d.
Balance in Bank, Jan. 1st, 1887	252	2	3
Cash in Mersey Docks ..	1,900	0	0
Two half-year's Coupons on £1,300 ..	50	5	4
Two half-year's Coupons on £600 ..	22	11	7
Two half-year's Bank Interest ..	4	6	3
	<u>£2,229</u>	<u>5</u>	<u>5</u>

CASH PAID.			
1887.	£	s.	d.
Jan. 21, Mrs. Rushall and Family	5	0	0
April 18 ..	5	0	0
July 26 ..	5	0	0
Nov. 1 ..	5	0	0
Dec. 31, Cash in Bank ..	309	5	5
„ Cash in Mersey Docks ..	1,900	0	0
	<u>£2,229</u>	<u>5</u>	<u>5</u>

Audited and found correct,
January 11th, 1888.

JNO. B. WOLSTENHOLME.
THOMAS GREAVES, *Hon. Treasurer.*

LIST OF SUBSCRIPTIONS TO THE VETERINARY MUTUAL DEFENCE FUND, 1887.

1887.	£	s.	d.
Jan. 2. William Whittle ...	0	10	6
„ 2. R. H. Cartwright ...	0	10	6
„ 2. Hy. Thompson ...	0	10	6
„ 2. Ralf Cox ...	0	10	6
„ 2. James Roe ...	0	10	6
„ 3. H. J. Goodall ...	0	10	6
„ 3. R. Reynolds ...	0	10	6
„ 3. B. Cartledge... ..	0	10	6
„ 3. A. H. Santy ...	0	10	6
„ 3. William Carless ...	0	10	6
„ 4. E. Faulkner... ..	0	10	6
„ 4. John Freeman ...	0	10	6
„ 4. R. C. Edwards ...	0	10	6
„ 4. John Markham ...	0	10	6
„ 4. James Storer ...	0	10	6
„ 10. William Woods ...	0	10	6
„ 10. J. C. James ...	0	10	6
„ 10. J. B. Taylor ...	0	10	6
„ 10. J. W. Anderton ...	0	10	6
„ 10. F. G. Samson ...	0	10	6
„ 10. William Roots ...	0	10	6
„ 10. T. G. Chesterman ...	0	10	6
„ 10. T. Collins ...	0	10	6
„ 10. W. H. Webb ...	0	10	6
„ 10. E. H. Leech ...	0	10	6
„ 10. James Beal ...	0	10	6
„ 10. E. Nuttall ...	0	10	6
„ 10. H. W. Caton ...	0	10	6
„ 10. William Elam ...	0	10	6
„ 10. R. C. Triggat ...	0	10	6
„ 10. C. Sheather... ..	0	10	6
„ 10. F. T. Stanley ...	0	10	6
„ 10. C. Morgan ...	0	10	6
„ 12. J. B. Wolstenholme... ..	0	10	6
„ 12. J. H. Ferguson ...	0	10	6
„ 12. F. D. Riddler ...	0	10	6
„ 12. B. Russell ...	1	1	0
„ 12. G. A. Banham ...	0	10	6
„ 12. Batt & Son ...	1	1	0
„ 12. F. Blakeway ...	0	10	6
„ 13. E. Meek ...	0	10	6
„ 15. F. Dunn ...	2	2	0
„ 15. Thomas Angus ...	0	10	6

1887.	£	s.	d.
„ 15. W. T. Peacock ...	0	10	6
„ 18. F. Danby ...	0	10	6
„ 18. S. Jackson ...	0	10	6
„ 19. Thomas Briggs ...	1	1	0
„ 20. D. T. Broad ...	0	10	6
„ 21. S. Secker ...	0	10	6
„ 21. T. D. Lambert ...	0	10	6
„ 22. F. W. Wragg ...	1	1	0
„ 31. George Rugg ...	5	0	0
„ 31. Thos. Secker ...	0	10	6
„ 31. Joseph Woodger ...	0	10	6
„ 31. G. H. Pyatt... ..	0	10	6
„ 31. Thos. Aubery ...	0	10	6
Feb. 2. Hy. Hogben ...	0	10	6
„ 5. William Broughton... ..	0	10	6
„ 5. J. S. Carter ...	0	10	6
„ 6. G. A. A. Oliver ...	2	2	0
„ 9. G. Moir ...	0	10	6
„ 12. E. Hodgkinson ...	0	10	6
„ 12. A. Over ...	0	10	6
„ 12. Hy. Oliver ...	0	10	6
„ 12. R. Mackinder ...	1	1	0
„ 26. W. Cawthorn ...	0	10	6
Mar. 2. J. & A. Lawson ...	1	1	0
„ 15. Ball & Son ...	1	1	0
„ 17. T. Walley ...	0	10	6
„ 18. T. A. Dollar ...	0	10	6
„ 22. H. Ferguson ...	0	10	6
„ 28. A. L. Gibson ...	0	10	6
April 22. Philip Deighton ...	0	10	6
May 13. W. Dobie ...	1	1	0
Aug. 4. George Newsom ...	0	10	6
„ 16. Thomas Cave ...	0	10	6
Oct. 29. Thomas Pratt ...	0	10	6
Nov. 14. G. H. Darwell ...	1	1	0
„ 24. Peter Taylor ...	0	10	6
„ 24. W. A. Taylor ...	0	10	6
Dec. 21. J. L. Barling ...	0	10	6
„ 21. T. Greaves ...	0	10	6
„ 21. George Morgan ...	0	10	6

£55 18 6

Audited and found correct,
January 11th, 1888.

JNO. B. WOLSTENHOLME.
THOMAS GREAVES, *Hon. Treasurer.*

Army Veterinary Department.

First-class Veterinary-Surgeon C. W. Gillard has left the Thirteenth Hussars for a tour of service in India, being succeeded in the regiment by First-class Veterinary-Surgeon S. Gillespie. First-class Veterinary Surgeon J. D. Edwards has been posted to the Tenth Hussars, ditto R. Moore to the Twelfth Lancers, and Veterinary-Surgeons R. Pringle to the Royal Scots Greys.

Some months ago, a mission was sent by Her Majesty to the King of Abyssinia, with a view to establish friendly relations between him and the King of Italy. The chief of the mission was Mr. Portal, and Veterinary-Surgeon Beech, of the Army Veterinary Department, who has for some years been attached to the Egyptian army, was the only European who accompanied him. After much fatigue and many adventures in Abyssinia, they reached the Negus, and their return to the coast was marked by extreme hardships and a narrow escape from being murdered, the interpreter (an Abyssinian) losing his life. A long account of their travelling and adventures is given in the *Standard* of January 9th, in which our colleague is alluded to as Major Beech. He appears to have played a very praiseworthy part in the mission, and to have, on more than one occasion at least, saved it from destruction.

Obituary.

First-class Veterinary Surgeon E. T. Cheesman, Army Veterinary Department, died at Chatham on January 2nd, after a few days' illness from acute Bronchitis, aged fifty years. Though his name appears in the Army List as having joined the service in 1867, yet he entered several years before, and retired in order to accept a civil appointment in India. This not proving satisfactory, he again joined the army in the year just mentioned. Serving in the 9th Lancers and the 5th Dragoon Guards, a few years ago he was transferred to the Army Veterinary School at Aldershot, where he filled the post of instructor until the middle of last year, when failing health led to his relinquishing it, and he was consequently stationed at Chatham. Possessed of much ability, of great integrity, and courteous and obliging, Mr. Cheesman was much esteemed by his professional colleagues in the service, as well as by his brother officers in the regiments in which he served. He graduated in 1859, and became a Fellow of the Royal College of Veterinary Surgeons in 1883.

The army has sustained another serious loss by the death, on January 19th, from Erysipelas, arising from an accident, of Veterinary-Surgeon G. Aitken, who was attached to the 16th Lancers, stationed in Dublin. Like Mr. Cheesman, Mr. Aitken served a short time in the army and then retired, but rejoined again in 1880. He was an excellent practitioner, zealous in the discharge of his duties, and highly esteemed in his regiment, being a special favourite with all his brother officers, who greatly lament his death. His professional brethren, to whom he was known, entertained the greatest friendship for him, his genial disposition, sincerity, and ability, gaining for him their admiration and respect. He served in the Soudan campaign (Suakim), and was in possession of the medal and clasp and bronze star. Graduating in 1868, Mr. Aitken was only thirty-nine years of age. He received a very imposing military funeral, in testimony of the high regard in which he was held by the Dublin garrison and civilians.

Death has also removed from among us a very worthy and much-respected veterinary surgeon in the person of Mr. William Broughton, F.R.C.V.S., of Leeds, in his fifty-seventh year. He died of Syncope, attributable to Heart

Disease, on the 4th January. He had been a Vice President of the Council, and President of the Yorkshire Veterinary Medical Society; for twenty years he was its honorary secretary, and was a prominent and unswerving supporter of these medical associations from their infancy to the hour of his death. Although a man of unassuming and unobtrusive manners, he was highly esteemed by all who knew him; his clear views, common sense on all matters appertaining to his profession, were always highly valued, and he will be greatly missed by the members of the Yorkshire Society, and by his professional brethren generally. He graduated in 1852.

The Registrar of the Royal College reports the following deaths:—

J. Wright, M.R.C.V.S., Burnham Market	...	graduated	1849
J. E. Pitt, M.R.C.V.S., Birmingham	...	"	1879
E. T. K. Quickfall, M.R.C.V.S., late of Toronto	...	"	1858
J. Wyper, M.R.C.V.S., Glasgow	...	"	1880
W. F. Cross, M.R.C.V.S., Battersea	...	"	1853
C. Hutson, M.R.C.V.S., late Lincolnshire	...	"	1838
Forrest Barclay, M.R.C.V.S., London	...	"	1860
G. Wyper, M.R.C.V.S., Donnington	...	"	1855
F. Cupiss, M.R.C.V.S., Diss	...	"	1822
P. E. Carter, M.R.C.V.S., East Dereham	...	"	1842

Jurisprudence.

APPEAL UNDER THE CONTAGIOUS DISEASES (ANIMALS) ACT.

AN appeal, brought by Joseph McCauley, veterinary surgeon, of Carlisle, against the Haltwhistle justices and another in respect of a conviction under the Contagious Diseases (Animals) Act, was heard recently at the Northumberland Quarter Sessions. Mr Cavanagh, of the Northern Circuit, who was specially retained, and Mr. Blake, instructed by Mr. Johnson, of Carlisle, appeared for the appellant; and Mr. J. Strachan and Mr. Hugh Boyd, instructed by Mr. Evan Sanderson, appeared for the respondents, who were the Haltwhistle justices and P.C. Peter Spratt, under whose information the appellant was prosecuted.

Mr. Sanderson (Clerk of the Peace) read the record of the conviction, showing that, on the 29th of September, 1887, Joseph McCauley, veterinary surgeon, was convicted at the Haltwhistle Petty Sessions of having, at Greenhead, aided and abetted George Tweddell in the commission of an offence punishable by summary conviction, to wit—in the removal to the county of Northumberland from the county of Cumberland of twenty-three heifers, in contravention of regulations duly made on the 5th of May, 1887, by the Local Authority of Northumberland, by virtue of a Privy Council order; and that he was ordered to pay a fine of £10, and to pay to the informant, Peter Spratt, £1 and costs.

Mr. Cavanagh respectfully submitted that, although he would be only too happy that Mr. Sanderson should advise the Bench in that case, he ought not to do so, for this simple reason: that he appeared as prosecutor, no doubt in the discharge of his duties, before the magistrates. He did not wish it to be inferred that he believed Mr. Sanderson would take any undue advantage of his position; he made his objection as a matter of principle.

The Chairman said Mr. Sanderson would not be consulted on any point which involved his discretion.

Mr. Cavanagh objected to the conviction on two grounds, but his objections were over-ruled.

It was decided to hear the respondent's case first; in effect, to re-hear the case from the beginning.

This having been done, the Chairman intimated to Mr. Cavanagh that the Bench was against him, and must uphold the decision of the Haltwhistle Bench.

Mr. Cavanagh asked the Bench to grant him a case on the points he had mentioned.

The Chairman said he would not like to put his pen to paper to any statement that he had any doubt in the matter.

Mr. Cavanagh said he was quite willing that all the blame and responsibility should be thrown upon him.

The Bench, after some discussion, refused to grant a case for appeal. The question of taxing the costs of the case was referred to the Clerk of the Peace for Cumberland.

Notes and News.

MORBID APPETITE OF AN ELEPHANT.—Barnum's elephant Alice, Jumbo's illustrious consort, has been dissected at Bridgeport, Connecticut. In her stomach were found 300 pennies, part of a pocket-knife, four walking-stick ferrules, and a piece of lead pipe.

TOXICITY OF PULMONARY EXHALATIONS.—Does the surface lining of the lungs give off a toxic substance like the general run of glandular surfaces? MM. Brown-Séquard and d'Arsonval reply to this question in the affirmative and as the result of direct experiments performed on rabbits. If a certain quantity of water be injected into the lungs of an animal and then be immediately withdrawn, and after filtration injected into another animal, phenomena of poisoning are observed. A considerable diminution in the breathing is the chief observation, and this is attended with dilatation of the pupils. The animal died in seven hours. At the necropsy cerebral anæmia was noted, and serous effusion into the ventricles and at the base of the brain. There were no signs of embolism; the heart was contracted and the cavities on both sides contained black blood; the blood was red in the inferior vena cava, but black in the superior. Expired air contains something more than gas and water—a fact which needs in itself no further attestation than that supplied by the olfactory sense.

EFFECTS OF PHOSPHORUS ON YOUNG ANIMALS.—Dr. Alexander Kisel, of St. Petersburg, who has made a series of observations on the effect of small doses of phosphorus on young animals, has found that it never exerts any beneficial effect on the growth of bone, but that, on the other hand, the apparently slight disorder of the digestive functions which very small doses produce is liable to result in death. When given to puppies in doses of 0.0001 gramme per kilogramme of weight, symptoms of chronic poisoning were produced, with atrophy and disintegration of the bones. In doses of half this amount the development of the animal was retarded, but those equal to 0.000033 gramme per kilogramme of weight appeared to be innocuous and produced no effect at all upon the body.

PASTEUR'S METHOD SIMPLIFIED.—Dr. Högyes, of Buda-Pesth, has published in the *Orvosi Hetilap* an account of some researches he has made on the protection of dogs from Rabies by a somewhat simpler method than that employed by Pasteur. He, too, makes use of the spinal cord of an infected rabbit, but, instead of drying it to a gradually increasing extent to obtain various degrees of activity, he merely rubs it up with water containing chloride of sodium, so as to make solutions varying in strength from 1-10th to 1-5,000th. The dog to be protected is injected successively with these, beginning with the weakest. The results appeared to be quite satisfactory, and a complete immunity from Rabies to be secured by six of these injections.

RICKETS IN LIONS.—At a recent meeting of the Pathological Society, Mr. Bland Sutton exhibited specimens illustrating a peculiar effect of Rickets upon the skulls of lions. Last session he showed some similar specimens, in which the bones of the skull pre-formed in membrane were those most affected in Rickets; this applied to all mammals. The carnivora possess an ossified tentorium which normally is of the thickness of writing paper. When the skull is thickened by Rickets this bony tentorium is also affected, the enlargement giving rise to pressure symptoms and some curious effects on the brain. The specimens previously exhibited showed the changes which occur in the brains of cubs; the enlarged tentorium presses upon the vermiform process of the cerebellum, and this compression occludes the fourth ventricle and intercepts the inter-ventricular communications leading to Hydrocephalus, with well-marked symptoms, general Paralysis, and death. When the thickening of the tentorium occurs at a later date the effects upon the brain are somewhat different. The large tentorium presses upon the vermiform process of the cerebellum and obliterates the fourth ventricle, but instead of causing extreme dilatation of the third lateral ventricles in the cub, we find these cavities are but little larger than usual. The effects upon the floor of the fourth ventricle are somewhat different, for an examination of the cerebellum and medulla in longitudinal shows that the abnormal pressure of the vermiform process causes erosion of the floor of the fourth ventricle, and in one of the specimens this portion of the cerebellum is accommodated in a distinct shallow groove. The differences may be accounted for by the unyielding character of the cranium at the age of two years in lions as compared with the accommodating nature of the sutures and fontanelles in the cub. The lions from which the specimens were obtained were paraplegic for many weeks before death, and in one the tail became gangrenous and sloughed. On the hind limbs were three large ulcers comparable to bed-sores. In reply to Sir James Paget, he said that Rickets was not found in animals in the wild state. John Hunter's specimens were probably obtained from menageries. An extinct form of whale (*Pachycanthus*), found in a large tract of country near Vienna, was shown by Paul Gervais to have signs of Rickets, and with a remarkable narrowing of the spinal canal to a mere chink.

CHRONIC GLANDERS SIMULATING SYPHILIS.—Dr. Sakotski, writing in the *Méditsinskoe Obozrénie*, describes the case of a young soldier who suffered from ulceration of the palate, which extended into the nasal cavity, and destroyed the inferior turbinated bones. This was followed by a tumour of the eyebrow, by pains in the knee and ankle, suppuration of the left ear, and a metastatic abscess on the back of the right hand. There was at times some evening pyrexia. The case was looked upon as probably syphilitic for about two years. Then nodules and œdema began to appear on the face, and it was believed that it was Glanders. After death, which was due to exhaustion, Dr. Vigandt made a microscopical examination of sections of the nodules, and also examined the ichor from the ulcerated surfaces, finding bacteria resembling those described by Löffler and Schutz, but he was unable to prove them to be the true cause of Glanders.

RUSSIAN ARMY HORSES.—The *Esercito Italiano* (Rome) gives the following statistics of the horse effective of the Russian Army:—The Regular Army comprises 1,530 officers' chargers and 52,729 troop horses. Of this number, 2,079 have served twelve years, and 5,326 ten years. There are thus 7,405 horses almost unfit for service, although the budget of next year provides only for 5,240.

DOMESTIC ANIMALS IN SIBERIA.—According to a foreign exchange "there are in the Ob and Irtysh region of western Siberia about 2,000,000 horses,

1,500,000 head of horned cattle, 3,000,000 sheep, and 100,000 reindeer. For eastern Siberia the figures are approximately 850,000 horses, 1,100,000 horned cattle, 1,120,000 sheep, 50,000 reindeer. In western Siberia the Siberian plague makes great ravages, and the average losses are estimated at about 37,500 head of cattle annually."

M. PASTEUR.—Owing to continued ill-health, M. Pasteur has thought it necessary to offer to resign his post of perpetual secretary to the Academy of Sciences; but as the eminent biologist is held in great esteem, his application has not been granted, and he has been requested to continue in office with a *locum tenens* to do his work.

RABIES AND HYDROPHOBIA.—According to the recently-issued report on vital statistics relating to England and Wales, it appears that the deaths from Hydrophobia, which had risen in 1885 to 60—a higher number than in any year with the exceptions of 1874 and 1877—fell in 1886 to 26, and were fewer than in any year since 1869. Of these 26 deaths 10 occurred in London, while the remaining 16 were distributed as follows: Devonshire, 1; Derbyshire, 2; Cheshire, 2; Lancashire, 6; West Riding, 5. This distribution tallied pretty closely with previous experience, Lancashire and Cheshire being the counties that are found on an average of many years (1864-86) to have had the largest number of deaths from this disease in proportion to their populations, and the West Riding and Derbyshire also standing high up in the list. Could a census be taken of stray curs, the cause of this distribution would probably be apparent. In London, at any rate, the destruction of over 30,000 stray dogs in the nine months beginning with November, 1885, and the compulsory muzzling of all other dogs in the streets, appears to have been most efficacious; for while in 1885 the deaths from Hydrophobia registered in London had risen to the unprecedented number of 26, in 1886 they fell, as before stated, to 10; and of these 10, 6 were registered in the first quarter, 2 each in the second and third quarters, and none in the last three months of the year.

HORSE SYPHILIS IN THE UNITED STATES OF AMERICA.—Referring to what we have already published regarding the disease among horses known as *Maladie du Coit*, which has caused the quarantine and slaughter of a number of animals in De Witt County, Illinois, it is stated in the *North-western Live Stock Journal*, Cheyenne, as follows:—"We cautioned the public against buying horses that came from any infected locality, because it is almost an impossibility for even an expert to detect the disease in its first stages. That warning was given none too soon. To-day its loathsome presence is found in Montana, where the importation of a stallion from Washington Territory last year caused the spread of the disease to such an extent that over fifty cases have been found, and a number of them have died. The others are in quarantine and will be killed. Kansas has a number of cases, and reports that seem worthy of credence announce its presence in California. We have no information from Washington Territory that locates the disease there at present, but the stallion that spread the disease in Montana came from Washington Territory, and undoubtedly took it in that section. The presumption is that there are other cases there, for the disease is only transmissible by copulation. How widely scattered the disease is already is a matter of great uncertainty, because it existed in McLean and De Witt counties, Illinois, for nearly two years before its identity was established, and during that period a number of animals were sold to go into remote sections of the country. Undoubtedly some of these have given off the plague."

PRESENTATION TO SIR HENRY SIMPSON.—Prince Christian, on behalf of the subscribers, presented at the Windsor Guildhall, on January 14th, an

address and silver dessert service to Sir Henry Simpson, the former Mayor. The testimonial, which cost upwards of 200 guineas, was given by many of the inhabitants of Windsor and the neighbourhood in recognition of the recipient's untiring and successful services in promoting and carrying out the scheme to commemorate the Queen's Jubilee.

ELECTRICITY AS A GALACTOGOGUE.—For some time various Continental veterinary surgeons have recommended Faradisation as a means of restoring or stimulating the mammary secretion, and some very interesting and probable instances of success have been cited, showing that at the end of a few applications the mammary gland has resumed its function with remarkable vigour. But this mode of treatment is not so novel as some believe, so far as the human species is concerned; for in the *Bulletin de Therapeutique*, M. Misrachi proves that the idea of stimulating the mammary secretion by means of electricity is at least thirty years old, and was first started by M. Aubert, of Mâcon; Misrachi, however, gives an instance in which the secretion was completely restored in two days by Faradisation, after it had been entirely suppressed.

Correspondence.

THE PRINCIPALSHIP OF THE ROYAL VETERINARY COLLEGE.

SIR,—The lamentable and untimely death of Professor Robertson will doubtless produce a feeling of profound regret throughout the profession, and more especially to those who were privileged, like myself, to enjoy his personal friendship. That the deceased gentleman did much for veterinary science during his principalship every member of the profession must admit, and his good works will follow him. Now that he has passed to his rest, the question naturally arises as to who will be elected to fill the honourable position he occupied. To my mind it requires very little consideration to arrive at a satisfactory conclusion, the gentleman I shall name being proclaimed on all hands the one most able and suited to follow Professor Robertson, viz., Professor Wortley Axe. It is well known that for twenty years this gentleman has been connected with the Royal Veterinary College, filling the various and arduous positions of Demonstrator of Anatomy, Lecturer on Anatomy, Histology, General Pathology, Morbid Anatomy, and Clinical Medicine. He was the first to institute Histology, General Pathology, and Morbid Anatomy, as a part of the College instruction, and not only to institute these subjects—but generously for some years he absolutely taught them gratuitously until they were made a part of the curriculum. The present admirable system of Clinical teaching was also organised by Professor Axe.

I write not as an advocate, but with the feeling that the appointment of Principal would be but a reward justly due for the invaluable aid Professor Axe has not only given to the College and its members, but also for the immense benefit the social status of our profession has received through his indefatigable efforts and scientific teaching.

As a lecturer he is too well known and admired to need any praise from my pen. Suffice it to say on this point he is *par excellence*.

His wide knowledge of agricultural matters and stock management has alone made his name prominent in this and other countries.

Universally esteemed by his brethren, a general favourite with the students, a hard worker and deep researcher, with "Forward" for his motto, I venture to think upon no man's shoulders would the Principal's cloak fall with greater satisfaction to the profession and public appreciation than upon those of Professor Axe.

If his twenty years' hard services, which have been rendered faithfully and

Correspondence.

well, are worth anything, they are worth a suitable reward. Were the vo. of the profession taken, it would be *Palman qui meruit ferat* ("Let him bear off the palm who has earned it,") and no living veterinary teacher has better acquitted himself than Professor Axe.

Hastings.

J. WOODROFFE HILL, F.R.C.V.S.

TRICKY TITLES.

SIR,—I have every respect for the Royal Veterinary College Veterinary Medical Association. I believe, in common with others, that it becomes the means of much useful interchange of knowledge, and by its discussions on the various papers brought before it fresh ideas are developed, and very often old errors exploded. I also think it a good practice to distinguish the man who reads and defends a paper by some other designation than that of Member; and I suppose it is to a general feeling of this nature that we must attribute the adoption of the honorary title of Fellow. So far, so good; but it is here that some confusion seems to creep in. Many students appear to have an idea that when this fellowship is obtained, they are the happy possessors of a brand new degree; and in certain cases which have come under my notice lately they cherish this delusion after they become members of the profession, and then we read of Mr. So-and-So, M.R.C.V.S. and F.V.M.A. As I before remarked, this must simply be a mistake on their part. I am far too charitable to suppose they wish either to humbug the public, or to obtain an unfair advantage over a more modest practitioner, who is content with his legal qualification. Taking these views of the matter, I think it would be well if the president of the R.C.V.M.A. made the bearings of this subject very clear to the present members, and that the secretary be instructed to communicate with those past or present members who make use of the title F.V.M.A. There must be some limit or else these gentlemen who, quite in ignorance, begin with F.V.M.A., might blossom into L.I.A.R. (living in the Argyle-road, or Argentine Republic), and so on *ad infinitum*.

Apologising for taking up so much space on such a little matter,

E. A. HOLLINGHAM, M.R.C.V.S.

Tunbridge Wells.

THE FLESH OF TUBERCULOUS CATTLE.

DEAR SIR,—I enclose you a report of seizure of diseased meat at Workington, from *West Cumberland Times*, of January 14th, 1888.

As many of our best animals that are slaughtered for food often show most distinctly the presence of Tubercle, I would like your opinion whether the carcase is fit for human consumption when the flesh sets firm and is of a good colour?
Cumbrian.

SEIZURE OF DISEASED MEAT AT WORKINGTON.

The attention of the Local Board officials was called to a carcase of beef at the slaughter-houses on Tuesday night by the owner of the beef, Mr. H. Shackley, butcher, Workington. Dr. Highet, Mr. Warwick, and Mr. Eaglesfield on Wednesday morning examined the beef. The entrails, from a cursory examination, showed that the animal when living had suffered from what is locally known as "Clyred"; but from the healthy appearance and hue of the meat Dr. Highet said he could not condemn it, and recommended that Mr. Soulsby, V.S., be called in to examine it, and to ascertain the nature of the disease, and whether it had extended to the system. On Mr. Soulsby's examination he found the carcase quite unfit for human food, and that the animal had suffered from Tuberculosis, and it was that gentleman's opinion that this particular kind of disease, which is one of the forms of Consumption, is quite liable to be communicated to the human frame through eating, this liability

being greatly increased when the meat is not thoroughly cooked. On his lodging this report at the Board-room, the previous owner of the animal was at once communicated with. He arrived, attended by his veterinary surgeon, Mr. Thompson, of Aspatria. The latter gentleman, having examined the animal, at once corroborated Mr. Soulsby's opinion, and pronounced it unfit for human food. The owner, Mr. W. S. Barnes, of Mowbray, refunded Mr. Shackley the purchase money, and said he would not trouble the Board to go before the justices for an order, but gave them authority to destroy the meat forthwith. Praise is due both to Mr. Shackley and Mr. Barnes for their assistance in helping the Board's officials to get the meat destroyed. This case is of peculiar interest to the public, inasmuch as beef, after being dressed from animals which have suffered from this disease, cannot be distinguished from sound, healthy meat by any but a professional eye, and as the disease is prevalent to a great extent amongst fat cattle, it would be almost desirable that where all public slaughter-houses exist the meat inspectors should be appointed from the medical profession, as by this means only can safety be insured.

[We are decidedly averse to allowing the flesh of Tuberculous cattle to be used as food, and especially in very bad cases. It is always best to err on the safe side.]

The annual meeting and dinner of the Lancashire Veterinary Association will take place at the Grand Hotel, Manchester, on Friday, February 10th—the meeting at 4.30 and dinner at 5 p.m., prompt.

ARTHUR LEATHER, *Hon. Sec.*

The annual meeting of the Royal Counties' Veterinary Association will be held at the Great Western Hotel, Reading, on Friday, February 24th, at 2 p.m.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from R. J. Dawson, San Francisco; Fred Smith, Aldershot; R. W. Burke, Jubblepore; F. F. Collins, Dublin; A. Johnston, Perth; T. Chambers, Dudley; T. W. Kendall, Melbourne, Australia; J. A. Nunn, A.V.D., Cape of Good Hope; T. Greaves, Manchester; F. C. Mahon, Southsea; A. Baird, Edinburgh; Dr. Duncan, Toronto; A. Leather, Liverpool; H. Thomson, A.V.D., Canterbury; A. W. Hill, London; R. Rutherford, Edinburgh; R. C. Edwards, Chester; E. A. Hollingham, Tunbridge Wells; F. G. Ashley, Wigton; J. W. Hill, Hastings; Sidney Villars, Harrow.

BOOKS AND PAMPHLETS: *L. Villain and V. Bascon*, Manuel de l'Inspecteur des Viandes; *7. H. Steel*, Treatise on the Diseases of the Dog; *C. A. Gordon*, Comments on the Report of the Committee on M. Pasteur's Treatment of Rabies and Hydrophobia; *C. S. Roy, 7. G. Brown, and C. S. Sherrington*, Report on the Pathology and Etiology of Asiatic Cholera; Report of the Bombay Veterinary College and But Sakarbai Dinshaw Petit Hospital for Animals; *A. Sticker*, Ueber die Entwicklung und den Bau des Wollhahres beim Schafe; *A. C. Cope and V. Horsley*, Reports on the Outbreak of Rabies among Deer; *Sir James Paget*, Morton Lecture on Cancer and Cancerous Diseases.

JOURNALS, ETC.: *Quarterly Journal of Veterinary Science in India*; *Archiv für Wissenschaftliche und Praktische Thierheilkunde*; *Der Thierarzt*; *Recueil de Méd. Vétérinaire*; *Oesterreichische Zeitschrift für Wissenschaftliche Veterinärkunde*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Revue Vétérinaire*; *Echo Vétérinaire*; *Annales de Méd. Vétérinaire*; *Bulletin Spécial des Vétérinaires de l'Armée*; *Journal of the National Agriculatural Society of Victoria*; *American National Live Stock Journal*; *Lancet*; *British Medical Journal*; *Mark Lane Express*; *Live Stock Journal*; *Edinburgh Medical Journal*; *London Medical Record*; *Hufschmied*; *Scientific News*.

NEWSPAPERS: *Farming World*; *Newcastle Daily Chronicle*; *Carlisle Journal*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

MARCH, 1888.

ON TORSION OF THE VAGINAL PART OF THE UTERUS AND THE UTERINE PORTION OF THE VAGINA IN PARTURIENT ANIMALS.

BY A. E. MACGILLIVRAY, BANFF, N.B.

THIS is a subject of paramount importance to the country practitioner, and the profession ought to feel very grateful to Fleming and Cunningham for their interesting writings on this abnormality during parturition. It most commonly occurs in the cow, but I once met with it in a small terrier bitch, and Lewis, of Barnet, records an interesting case in a Cheviot ewe. But whether in cow, ewe, or bitch, I consider it so serious a complication as to render it utterly unnecessary for me to offer any apology for again bringing it before the profession.

During the last nine months I have met with no less than three cases in the cow, of this peculiar torsion, and my chief reason for referring to the subject is that I wish to explain the *modus operandi* by which I got rid of the abnormal twist in these cases. I am quite aware, from practical experience, of the value of the "rolling" system, as recommended by Fleming and so successfully carried out by Cunningham and Lewis, but at times this rolling, owing to patient's surroundings, will be found almost impracticable, as it really was in the first case in which I adopted the (what I call) *jamming* system.

I don't intend giving the particulars *in extenso* of the three cases referred to; suffice it to say that the plan adopted was the same in each, namely, on ascertaining the presence and the direction of the twist, and whether I had an anterior or posterior presentation, I at once proceeded to attach cords to the parts presented, which, owing to the contraction of the parts caused by the twist, is often a very difficult job. Having secured the necessary parts—as, for example, in my first case, which was a posterior presentation, the hind legs—I put severe traction outside on the cords and drew the

hind-quarters into the torsion until they were therein thoroughly *jammed*. I then endeavoured with all my power to turn the jammed hind-quarters in the direction of the twist; in this I was much helped by an assistant manipulating the calf's feet and pasterns, which were outside the vulva, in a similar direction. After a great many efforts, we succeeded in getting the calf's croup shifted from left flank to right flank of the cow, and with this change in the foetal position, the utero-vaginal twist had wholly disappeared, and delivery at once followed with comparative easiness. The time occupied in this case was about one hour, while in the other two cases, which were anterior presentations, the time occupied in each was about two hours.

In anterior presentations, the great obstacle in this jamming process is getting the head and fore-feet, or rather part of them, *both* into the twist at once, which accounts for the greater length of time occupied. In my last case, about two months ago, I was nearly defeated, owing to having mistaken the direction of the torsion; on reversing my endeavours, however, the head slipped round most beautifully from right to left, and the twist was nowhere in a very short time.

I need scarcely observe that the chief object to be attained in this operation for utero-vaginal twist, is getting the foetus, or part thereof, thoroughly *jammed* into the torsioned parts, so that the foetus and the walls of the twisted portion of the uterus and vagina may be, as it were, *one*. Then, when the one (foetus) is turned, round also goes the other (utero-vaginal walls) and, presto! the twist is gone.

Mr. David Crabbe, M.R.C.V.S., Aberdour, N.B., recently gave me the particulars of two cases of torsion in which he operated successfully by *jamming* the foetus into the twist, and then turning, as above. Another friend of mine, Mr. Adam Sievwright, M.R.C.V.S., Tarland, N.B., sends me extensive details of no less than three cases in which he successfully adopted the rolling system. Mr. Sievwright is quite enthusiastic about Mr. C. Cunningham's cases, as it was according to Cunningham's details that Sievwright operated. Crabbe also gave me the history of a case or two in which he rolled his patients, and so accomplished delivery.

In all the cases which have come under the notice of either Sievwright, Crabbe, or myself, the poor patients had been from 24 to 36 hours *in calving before* we were called in!

In the case of the terrier bitch, I had to put her under chloroform, and secure the pups, one by one, with Breulet's tube and noose, before I could make anything of delivery. Only one of the pups and the mother survived the event.

NOTE ON ANATOMICAL INJECTION.

BY PROFESSOR LIMONT, GLASGOW VETERINARY COLLEGE.

THERE is virtue in a good recipe, and in these days we are apt to forget it. An extra ounce will move the waggon, and a very little change will sometimes make a useless formula work like magic. For instance, the difference in strength between the tinctures of iodine of the old Edinburgh and of the British Pharmacopœia involves one remarkable difference in action. The first, if used in a certain way, never fails to cure hydrocele of the human tunica vaginalis. The second, used in the same way, often fails. I wish to lay before the profession a formula that never fails.

There must be many who would like to work out for themselves such a subject as the blood supply of the horse's foot. I think I can tell them how to get an injection of the arteries without any difficulty. The method is the usual one, but the mass is used cold, and injected into the cold arteries. There is therefore no necessity to inject just after death, or to warm a part before beginning operations. In other words, there is no trouble or loss of time. Take: red-lead (dry), $\frac{1}{2}$ -lb.; sugar of lead, $1\frac{1}{2}$ oz.; white lead, 2 lbs.; turpentine, 1 gill; turpentine varnish, 1 pint. Pound together in a mortar the red-lead and sugar of lead. Then thoroughly work in the white-lead with the pestle. Then gradually mix in the turpentine. Lastly (just before injection) mix in the turpentine varnish. This is enough to inject all the arteries of the human subject.

Anybody can inject with this mass the very finest vessels visible to the naked eye. It runs so easily that the usual caution to inject slowly may be nearly disregarded. One can dash it into all the smallest arterioles of a limb. Of course it must be used at once after adding the turpentine varnish, for it soon sets solid. There is only one difficulty, namely, to prevent escape from the mouths of small vessels. If the whole animal is to be injected from one artery, great care must be taken in making the incision into it. If a limb is to be injected after removal from the trunk, it will never do to tie the nozzle into the main artery, and inject after merely ligaturing the other vessels. The result would be an outpour from small vessels, reminding one of a street water-cart. A strong elastic band must be put round the limb just behind or over the nozzle of the syringe. It goes without saying that the limb must not be skinned. The beauty of this injection is that if it is sent into the big arteries it always goes into the very smallest. The result is that we get a vivid view of the real vascularity of a part. Its bright salmon-pink stands up well against everything. This formula was worked out by the late Mr. Carter, of the Western

Medical School, and used by him for several years. He told me that it had never once failed. And certainly it does not fail with us. I think it is a modification of the mass used by a well-known Edinburgh anatomist. His, however, is sometimes not satisfactory. Mr. Carter (like his rivals) kept a good thing to himself when he got it, and would not let out its composition. However, some time before his death, he gave the formula to us, on the understanding that it was not to go further than the Glasgow Veterinary College. I now publish it, because I think it may be useful in a profession free to dissect in private.

POISONING IN CATTLE BY THE *ÆNANTHE CROCATA*, OR WATER PARSNIP.

BY E. WALLIS HOARE, M.R.C.V.S., CORK.

THE following cases may be of interest to readers of the VETERINARY JOURNAL. On January 13th, I was called to attend some cattle about four miles from town, reported to be suffering from some form of poisoning.

On arriving I found that two cows had died in a short space of time, and that a third was in a very critical condition, presenting the following symptoms—abdominal pain, slight purging, accelerated respirations, pulse quick and weak, bloodshot eyes, with pupils largely dilated, frothing from the mouth, and constant bellowing; there was great tenderness on pressure over the loins, and a gradual want of power in the hind extremities.

To this animal I administered a dose of *R. opii* and *Ol lini*, also enemata of warm water, and after some time, as the animal seemed to become weak, I ordered *Oss* of whisky. This treatment was to be repeated if necessary.

The remainder of the cows, about twelve in number, had been removed to their stalls. The pasture was close to the bank of a river, and had recently been covered by a heavy flood. In the hollows of this field, and close by the ditches, there were large quantities of roots, some having small leaves sprouting, resembling parsnips, the majority having the remains of last year's growth, such as dried stalks, etc. These roots had evidently been some time in the water, as there was very little juice to be found in them; some appeared in pairs, others consisted of a collection of small tubers.

The remainder of the cattle showed as yet no symptoms, but I deemed it prudent to order a dose of mag. sulph. for each. Shortly after I left, about five of the animals showed commencing symptoms, viz., frothing at the mouth, bloodshot eyes, dullness, etc.,

and the owner administered the purgative medicine, which had a beneficial effect, as by next morning all the animals were well, including the case which received treatment at first. I made a careful *post-mortem* examination of the two cows that died.

From the owner's description, these animals had presented very violent symptoms prior to death, running about in a wild manner, falling on the head, ending in complete insensibility. The animal most recently dead I found in an outhouse. The carcase presented great rigidity of the limbs and jaws, bloodshot eyes, and a great deal of froth and fluid issuing from the nostrils.

The oral cavity presented signs of irritation, the lungs were slightly congested, the rumen contained a large amount of portions of roots, having a very rank odour, and resembling in every way the roots on the pasture.

The mucous membrane of this organ appeared softened and easily separable from the muscular coat. The abomasum showed a slight degree of inflammation, as also did the small intestines. The whole alimentary canal possessed the rank odour of the roots.

The second cow's body I found in the field. The same appearances were presented as in the first one, but the inflammation of the abomasum and small intestines was very severe, and the rumen contained even a larger amount of roots than the first. At my leisure I examined the brain and part of the spinal cord of the first cow, and found congestion of the vessels of the brain, and also congestion of the coverings of the spinal cord.

I may mention that on reading up the subject afterwards I found that similar *post-mortem* appearances were recorded in cases of poisoning by this plant in human beings. In "Husband's Forensic Medicine" the *post-mortem* appearances stated are "Congestion of the vessels of the brain and gastric irritation." The symptoms recorded are "those of delirium tremens," vomiting of blood, convulsions, first contraction and then dilatation of the pupil, spasmodic respiration, and an almost imperceptible pulse.

Finlay Dun, in his "Veterinary Medicines," states that the leaves of the *Enanthe Crocata* are also poisonous, and he gives an instance where forty-three cattle were poisoned by eating the fresh leaves of this plant.

He also states that this plant has similar physiological actions to the *Conium Maculatum*. But according to the results of experiments, the brain is only secondarily and indirectly affected in poisoning by the latter; whereas in poisoning by the *Enanthe Crocata* the delirium, convulsions, and coma, quickly appearing, point to the brain being directly affected, and the *post-mortem* results confirm this opinion. I may remark that in the roots which

came under my notice in the above cases there was an absence of that yellow foetid juice which is described as being present. This probably occurred from the length of time they had been soaking in the water, an opinion which the botanist to whom I sent some of them, to be certain of their identity, also entertained.

REMITTENT FEVER IN ANIMALS.

BY R. W. BURKE, M.R.C.V.S., A.V.D., JUBBULPORE, INDIA.

IF we may judge from our experience of the past two or three years, it is apparent that the aims of veterinary science are progressive. The spirit of inquiry into the nature of diseases is penetrating beyond the description of naked-eye appearances. It is largely concerned now with etiological considerations—a long step in advance of the once fashionable study of mere symptoms of disease. An important departure in veterinary research has been the investigations into the nature of fevers common in our animals. Not one of the least important contributions to the study of fevers is that by Mr. Nunn, which recently appeared in the *VETERINARY JOURNAL*. Mr. Nunn shows from Africa, what we have for some time held—both through these columns and elsewhere—to be practically true in respect of India, viz., that “Malarial” or Remittent Fever is a very common affection in the horse, and that in this animal it often *complicates or accompanies other maladies*, as, for example, Anthrax Fever, and is frequently mistaken for the latter. We have already referred to the important researches of continental veterinary surgeons on this subject; and equally important contributions are those which have emanated from our own country, but especially those of Dr. Fleming on equine and canine forms of Intermittent Fever seen in China and adjoining countries. The paper by Mr. Nunn, just published, is an important contribution to the literature of this subject, especially as it may awaken interest in the study into this relations of this fever with other specific diseases, but especially Anthrax in the horse.

It only remains for us to say a word on the subject of the prevalence of the fever as we have met with it, and described it, in this country, since looking for it during the last few years. For the details, we may refer to our supplemental report on Anthrax Fever in Meerut, our *Equine Diseases of India*, and other papers written since. The views which Mr. Nunn has enunciated in the *Journal* since our former articles were written, only inspire us with a desire to assist in any consideration of this subject, which may give a stimulus to future investigators, and make our experience more representative of general opinion.

In dealing with this subject, I can only repeat the assurance, now that the question has been brought before the profession, that strenuous efforts will be made in the future to do justice to the consideration of simple fevers in animals, equally with those of a specific nature. It is impossible *always* to win adherents to any new subject, but we trust the influence of other members in England will, like that of Mr. Nunn above mentioned, be energetically and usefully employed on behalf of this inquiry, whether practical or scientific. The material in hand is almost at every one's command, especially in this country, and affords the assurance that there will be no lack of inclination on the part of veterinary surgeons serving in India, and that contributions from their pen will be forthcoming in the present year, to facilitate the views and experiences which we have presented to our readers. And it is interesting to note that, notwithstanding the difficulties we had to experience in overcoming opposition at the first, members of the medical profession serving in India have pursued with unvarying firmness the policy of progress in science, which has been influential in demonstrating how, in hot climates, Remittent Fever may be mistaken for specific diseases—especially Typhoid Fever—in man.

The experience of medical men serving in India has shown that not unfrequently it terminates in Typhoid Fever—the same as in Anthrax seen in our animals; for Remittent Fever is no bar to other specific diseases—especially Anthrax in animals—and often co-exists with the latter, as I showed in the late Meerut outbreak of 1886-7. *The symptoms presented during life, the temperature charts, the post-mortem changes, as well as the characters of the organism found in the blood, all point to Remittent Fever in the horse.* Moreover, such a careful investigator as Mr. Nunn has published in the Journal his cultivation experiments, and results of inoculation in different animals, which all yield results that should prove encouraging to other investigators. The conclusion arrived at by Mr. Nunn is not very definite, but a new and hitherto undescribed (?) organism is reported to have been constantly found in the blood of animals suffering from this disease; whilst the clinical features of the disease, with the *post-mortem* characteristics, etc., are promised re-consideration next year. It may be added that the practical value of the bacillus met with in the African form of this disease, as seen in our own cases, as a means of diagnosis of Remittent Fever has been successfully tested by continental writers—both medical and veterinary—in many former outbreaks. The relation of the bacillus to the disease has been much criticised in various journals, although its presence as a diagnostic test is admitted on all hands. We wish Mr. Nunn

every success in his investigations in South Africa, and hope soon to have corroborative evidence from his pen with reference also to the other features of the disease we have above enumerated.

Somewhat allied to Anthrax, and showing the close connection that sometimes subsists between it and Remittent Fever, is Typhoid Fever, which kills so many young soldiers in almost every station in India.

NOTES ON TETANUS.

BY A. M. CREIGHTON, M.R.C.V.S., LISBURN.

MUCH has been said and written concerning the contagious nature of Tetanus, and it is of great importance that we, as a body, should try to elucidate facts concerning any given disease; and this one in particular, as it is fatal in a great many instances. A recent case that I have had under my treatment I will give the particulars of.

I was called to see a black gelding, seven years old, on September 9th, 1887, and the history of this case is as follows:—The animal had been in a cart the day previous, removing stones out of a field; the weather was very cold, with snow showers, and stormy. When he was brought in at night he did not show any signs of disease, but in the morning he could not open his jaws to take in food. The stable was well ventilated, but a little draughty; the animal stood in his accustomed stall, with four other horses in the stable that night. The day being very cold with snow showers, the temperature became reduced below the freezing point, so that the cold freezing air passing in through the stable (the animal having been sweating throughout the day) may have caused the disease.

The diet he got was the same as the others received, and was carried to it in the same bucket (the bucket many a time not *cleaned* of the saliva from the diseased horse) before the healthy ones were fed. This animal also stood in the same stall during convalescence, and none of the others took the disease, and there has not been a single case in the neighbourhood since. This fact does not go to prove that Tetanus is contagious. I visited him daily, giving him medicinal treatment till October 4th, 1887, when he got well, and has been working every day since. In this case the jaws were very firmly locked, so much so that I could scarcely get in a shilling between them. I attribute this case to the cold the animal stood out in during the day, and also the coldness of the weather that night and the draughty stable. There was no wound on the body.

Another case I had under my notice was that of a grey mare, eight years old. In this case the saddle-pad had become low, and

the back had got injured by the framework of the pad, a wound being the result. I treated this animal in the same way as the first, attending to the wound with antiseptic dressings. This animal died. Before this case appeared there had not been one in the locality for a long time, and there has not been one since near the same place, and that is sixteen months ago. Another animal has stood in the same stall for the above-mentioned period, and never showed any symptoms of Tetanus. The stall was not disinfected when the mare died, nor were any precautions taken to guard against the supposed contagious nature of Tetanus; and the animal that has stood in it for sixteen months at the time of writing this, has no signs of sickness of any kind. This latter case also tends to prove that Tetanus is not a contagious disease.

THE URINE IN AZOTURIA.

BY R. SHENTON, M.R.C.V.S., BELPER.

HAVING seen in the journals that there is at the present time a divergence in opinion as to the nature of the urine in the disease designated Azoturia, and, having recently had a case, a few observations on the point *in disputatione*, as well as a brief account of the case, may not be altogether uninteresting to the readers of the VETERINARY JOURNAL.

On the 18th of last month I was called in to see a horse, the property of a Mr. Meddings, who resides a short distance from Belper, but being unfortunately out at the time, another man's services were called into requisition. The next morning, however, the owner again came for me, saying he was anxious that I should see the case, and, in compliance with his request, I went, and found the horse to be suffering from Azoturia. I ascertained that he had had some extra rest previous to his being brought out on the day he was attacked; that the owner had pretty good grounds for believing the boy, whose duty it was to look after him, had been giving *rather* more corn than was usual, and that on being brought out he went very well, but after having gone a considerable distance, he began to stumble, and finally dropped down helpless.

He was in a loose box sweating profusely, and dashing his head about in a most dangerous manner; indeed, I ordered his head to be secured by means of a halter, otherwise he would most certainly have inflicted upon himself further mischief. The chief symptoms, besides those alluded to, were: pulse 80, small in volume, conjunctival membrane deeply injected, temperature 104°, gluteal and other muscles of the hind legs in a state of tonic spasm—as

hard as a board—and the urine high coloured, and dribbling away incessantly. Although it was undoubtedly a bad case, yet the appetite remained tolerably good.

The chief point of interest in the case, to me, was the analysis of the urine, and whether *urea* or *albumen* was the product to be found in greater abundance; consequently, I took pains to test it carefully, and immediately it was passed. The result, on the addition of nitric acid, was that I obtained a large quantity of the crystals of nitrate of urea, thus verifying the statements of Professor Williams, and differing from those of Dr. McFadyean.

Afterwards, however, it occurred to me that *it is possible* that sometimes *urea* and sometimes *albumen* may be the constituent present in excess, the presence of the one or the other depending upon the extent to which the oxidation process has been carried on. I wrote to Professor Williams, asking him if it were not possible that, in those cases where the animal is struck down almost immediately it comes out of the stable, and where, as a consequence the oxidation process has not been so completely performed, *albumen* may be present; while in those cases where the animal has travelled a considerable distance, thus allowing of the more complete performance of the oxidation process, *urea* may be found. To my letter, containing this suggestion, Professor Williams kindly replied, stating that my conclusions were "justifiable and worthy of further investigation."

As this is a matter of considerable interest, I hope the readers of the VETERINARY JOURNAL will not fail to take advantage of investigating the point in question, and should anyone desire further information on the above case, I shall be only too pleased to furnish it.

INOCULATION FOR PLEURO-PNEUMONIA.

BY J. D. POTTIE, M.R.C.V.S., PAISLEY.

As there has been a good deal both written and spoken about this important subject, I intend here to give a brief account of my visit to a dairy farm where the disease had broken out, and where some of the cows had been inoculated.

The farmer told me he had in all thirty-three dairy cows, three of which he had bought in at the market, and they looked very dull after a time; so he thought something was amiss, and sent for his veterinary surgeon, who told him it was his opinion that three of his cows were affected with Pleuro-pneumonia, and the other two he suspected.

After the usual lawful course, the three first-mentioned cows were killed, and the remainder of the stock, except the two suspected cows, were inoculated.

On making a post-mortem examination, the three affected cows were found in an advanced stage of Pleuro-pneumonia. In five days, the two suspected cows were also killed, and found to be affected with the disease.

It is thus plain that the two suspected cows remained in the midst of the inoculated animals for a long enough time to infect them, and so test the inoculation. The remaining twenty-eight inoculated cows are all healthy, milking and eating well, with five new cows standing in their midst.

One thing that strikes the eye when you enter an inoculated byre, is that you see that a number of the cows have lost, or partly lost, their tails; but this is no argument against the breeding capabilities of these animals, and I think it will be a long time before their offspring lose their tails. Neither is it an argument against their show qualities, at least as far as fat cattle are concerned; as at some of the recent fat cattle shows a number of the prize-winners were inoculated, and minus a tail, one of them having first place. They may fatten as well as, if not better than, other animals in winter, and also in summer, if a little tar is smeared over the skin to keep off the flies. It is, I think, evident that twenty-eight cows would have been slaughtered, or at least died, which would have cost the local authority of that place above £150, but which were saved. I think the veterinary surgeon in a case like this should get the thanks of, or even a little compensation from, the local authority. The fact also remains, that inoculation is beneficial, at least in large herds, and prevents, if it does not arrest, the ravages of this deadly disease.

EQUINE GLANDERS.

A RESUME OF FACTS AND OBSERVATIONS RELATIVE TO THE SAME.

BY F. C. MAHON M.R.C.V.S., SOUTHSEA.

(Continued from p. 93.)

That Glanders is hereditary is to be questioned, though, reasoning from analogy, it appears worthy of further study. The tracheal lesions are met with occasionally, and point to a prolonged course of Glanders infection and activity.

A peculiar and well-marked outbreak of Eczema had previously, and subsequent to the outbreak, been noted. The food being chiefly maize and chaff, with prolonged severe work, no doubt proved the main cause. Is it rational to connect the propagation of the outbreak with absorption of virus through the denuded patches of skin?

A period of three months elapsed from the first appearance of Glanders in the mare to the outbreak among the others. This would point rather to atmospheric sources as the medium of conveyance of the virus. In direct inoculation it is usually from four to seven days, or even longer, before marked changes are visible; that of infection, mediate or immediate, it is somewhat longer ere the diagnostic symptoms are developed. In these cases an interval of some weeks or months ensues from the reception of the morbid agent to the development of any characteristic symptoms.

These periods of incubation are not of actual occurrence; they are rather to be considered as being due to the virus being volatile, and acting primarily on the blood and internal viscera, and according as the animal is in good health, comfortably stabled, and every attention paid to general surroundings, the disease assumes a slowly progressive and insidious form. It is beyond doubt from following too closely old usages, adopting certain fixed principles in contagious and infectious diseases, that the serious and oftentimes peculiar and exceptional cases are overlooked.

Fixed symptoms must not be the barrier for enlightenment, and the suppression of outbreaks of Anthrax, Tuberculosis, or above all, "Equine Glanders." As an instance, I may without prejudice record the case of a horse with Chronic Glanders—*Glanders-Farcy* well pronounced, the patient supposed to be affected with a prolonged cold, and apparent recovery from Influenza. A more typical case of Glanders-Farcy could nowhere be found, yet for five months he was kept to prove how doctors differ, and the public very often have the satisfaction of detecting what the veterinary surgeon could or would not. Indurated sub-maxillary glands, knotty, three in number, the parotid of the left being circumscribed in appearance, œdema of throat, laboured breathing, sanious discharge at intervals from the nose, unthrifty coat, sweats diffused over sides and limbs, renal disturbances, œdema of the sheath, haggard looks, emaciation progressive, cough at times, pallor of mucous membranes, specific ulcers in both nostrils, anæmic murmurs both of heart and lung, consolidation over left well marked at the base, right lung in patches; when taken out to exercise marked dyspnoea; injected conjunctivæ, dilated nostrils, and other symptoms too numerous to be mentioned. Destroyed at last; even then a refusal to believe it glandered. The obvious lesson, not soon to be forgotten. The *post-mortem* examination revealed Chronic Glanders (Glanders-Farcy), and in the opinion, unsolicited, of the knacker, the worst case he had seen in twenty years of horse-slaughtering.

Repute counts for little; it is the close contact which one gains

in our large cities, and amid large establishments of horses, which bears favourably with the, comparatively speaking, few found now and then in the country, which alone admits of correct judgment.

Due attention to sanitary science, a more correct diffusion of knowledge to the daily requisites of animals, improved dwellings erected on correct hygienic and sanitary principles in open localities, provided with the best means afforded by experience of egress of all fluids and gases inimical to animal health, is requisite and beyond doubt, if we would advance a step nearer the conquering of a dire and powerful foe. The institutions now chiefly devoted to bacteriological research have much to unravel in the germ peculiar to the malady, so as to secure by inoculation, after cultivation of the virus, immunity or amelioration.

The following appear to be the chief facts, gathered from the outbreak on which so much of this paper is centred, and which are strengthened by a study of other outbreaks and cases hitherto witnessed.

1. That an average temperature of $102\frac{1}{2}^{\circ}$ Fah. is consistent with Chronic Glanders when the constitution, supported by medicinal stimulant treatment and natural stamina, is strong.

2. That an exalted temperature, with defective food supply of non-nutritive qualities, and fatiguing work, with rapid loss of sweat, renal activity, and defective sanitary and hygienic arrangements favour the development of Equine Glanders, when the system is impregnated by the virus.

3. That, as is well known by experiment and deduction, further debilitation of the system by exhausting the vital powers, *i.e.*, non-support of affected subjects in the chronic stages by stimulants, and lowering vitality by purgative agents, aggravates the complaint, and often produces structural changes without actively interfering with the temperature, beyond, on the average, half a degree.

4. That the appetite is good in advanced stages of Glanders when the structural changes are fixed and not progressive, and when the organs of organic life are not too *deeply involved*.

5. That Pneumonia of Glanders proves the least favourable for detection, and existing for a lesser or greater period often excludes further observations; in a few instances it escapes serious attention and causes the most extensive losses.

6. That isolation for a stated time of a suspected case, with every precaution, admits of the further extension, if contact has previously existed with others, or that the isolated case was primarily and truly the receptacle of the virus of Glanders, the animal system proving amenable to its further progress.

7. That mares, taking an average, are less often the victims than horses or geldings, the like being applicable to donkeys.

That the recent observations of Dr. Kransfield, following the statements of Löffler, go far to show that the activity of propagation takes place when, by death of the bacilli, spores are evolved by the channels of excretion, kidneys, skin, etc. The experiments on guinea-pigs, in which death was due to Glanders, revealed, on *post-mortem* of the horses from which the virus was taken, the same complaint.

That we are on the right road toward elucidating Glanders must be admitted by the experiments of Kransfield, who records a case where Glanders was not supposed existent, and the nasal discharge examined, the typical bacilli of Glanders was found. Further experiments are needed in this direction and the bacilli studied more closely, ere with confidence and good result we can carry out further preventive measures towards its mitigation and suppression. The malady is one requiring our utmost care in dealing with it, and also on our part close contact and experience to cope successfully with it.

That Diabetes oftentimes accompanies Glanders, more oftentimes Farcy. The repute that Glanders follows on an attack of Diabetes, affords good ground for belief that the systemic weakening affects the growth and development of Glanders, ever associated with exhaustion and climatic debilitating influences.

Editorial.

VETERINARY EXAMINATION OF HORSES AS TO SOUNDNESS.

AMONG the most important duties which are imposed on members of the veterinary profession, is that of giving an opinion as to the soundness of horses, which of course means their freedom from disease or defects that may impair their usefulness, either presently or prospectively, immediately or remotely. Definitions of what constitutes soundness or unsoundness have been attempted, but the best of them are perhaps imperfect, and, therefore, more or less unsatisfactory; and if we might judge from the opinions given in the law courts and elsewhere, one might almost infer that veterinary surgeons were not always agreed among themselves as to whether certain conditions do or do not constitute what may be regarded as coming within the meaning of the term. Nay, and worse still, litigation not unfrequently demonstrates that very prominent members cannot agree as to whether an abnormal condition which would render a horse unsound really exists. If such disagreement were owing to the obscurity of the condition, to the supposed defect being located beyond the reach of ascertainment by hand and eye, then the divergence might be excusable on the ground of difficulty; but when the source of contention is accessible to eye, ear, and hand, then the affair is less likely to be viewed favourably by the lay world. When the dispute is as to whether a spavin, a splint, or a cataract is or is not present, then the public are not likely to place much reliance on the skill of experts; for these abnormalities, if they are obvious to one practitioner should be so to another. A spavin that can be felt can also be seen, and there should be no doubt as to its presence or absence. Yet how often has it happened that some veterinary surgeons have sworn to the existence of this exostosis on a horse's hock, and others have averred that the articulation was perfectly healthy. And how often has it not also occurred that horses have been condemned as unsound, because they had what the inimical experts called "coarse hocks"—joints which, in reality, were the opposite of defective.

It can scarcely be denied that the diversity of opinion often entertained by veterinary surgeons, not only as to what constitutes unsoundness, but in many cases as to whether recognised causes of unsoundness are at all present in horses certified to as having them, brings discredit and loss of confidence in their knowledge. It only too often happens that there is a tendency by some to carry unsoundness notions too far, and perhaps in others to consider them too lightly. Mistakes and oversights may occur in examining horses, as in other affairs; but surely there should exist no doubt in disputed cases as to whether a horse is lame, spavined, or diseased in its eyes or in any other part which can be seen or felt. It is such contentions which bring ridicule upon experts and damage their reputation. Surely such mishaps might be to a very great extent,

if not altogether, avoided. An agreement might also be come to as to what really constitutes unfitness for work in horses—for such is the meaning of unsoundness. A horse may be unsound for one purpose and not for another; for instance, a stallion may be unsound for racing or hunting, through strain of tendon, fracture or other accident, or even from Laminitis caused by over-exertion or otherwise, and yet be sound for stud purposes. To condemn the animal because it would be likely to beget unsound stock through these defects, would be as reasonable as to assume that a man with a wooden leg would probably have children with wooden legs.

Thousands of horses do sound service for years which would not receive certificates of soundness from many veterinary surgeons; and very many are rejected as unsound which have never been “sick or sorry,” as the saying is.

The question of unsoundness, and especially hereditary unsoundness, is one that demands serious consideration by veterinary surgeons, and a re-examination of the subject appears to be absolutely necessary, in order to ascertain how many of the ideas pertaining to it rest on tradition or fancy, and not on substantial fact. It is well to get rid of sentiment and theory when dealing with a matter that involves such large and serious interests, as those connected with horse production and utilisation.

SYNOPSIS OF A PAPER ON PREVENTIVE INOCULATION FOR SYMPTOMATIC ANTHRAX OR BLACK-LEG.*

BY PROF. TH. KITT.

PROFESSOR KAUFFMANN, of Lyons, was kind enough to send me a quantity of No. I. and No. II. Blackleg vaccine, in four parcels, each containing twenty doses. The material was employed as follows:—

I. Twenty doses of vaccine No. I. (which consisted of a dark brown powder) were mixed with sterilised water in a sterilised mortar. A few drops were used to inoculate fluid-nutrient gelatine and some test tubes for plate cultivations. The remainder, which contained some undissolved particles, was drawn into a sterilised syringe, and inoculated into the following animals—

1. A white sheep	}	2 cubic centimetres.
2. A black sheep		
3. A young guinea-pig	}	1 cubic centimetre.
4. A young guinea-pig		
5. An old guinea-pig		
6. A sparrow	}	1 drop.
7. A canary		
8. A white pigeon		
9. A black pigeon		
10. A white mouse		

During the operation the precautions recommended by Arloing, Cornevin, and Thomas were observed.

In this manner each sheep received four times the dose which is stated by Arloing, Cornevin, and Thomas to be sufficient to produce immunity.

* Translated by F. Raymond, F.R.C.V.S., F.R.M.S., F.R.G.S., Army Veterinary Department.

The last drops were used for microscopic examination, and were found to contain the characteristic bacilli of Symptomatic Anthrax, with spores. The artificial cultivations, although under observation for three weeks, showed no contamination. The bacilli did not grow; this, however, is not necessarily proof that they were dead, but may refer to their biological peculiarities. The smaller animals (Nos. 6-10) suffered in no way from the inoculation. During the eight days they were under observation, the temperature of the sheep varied from 39.0° C. to 39.3° C. The local swelling was very unimportant, and vanished in twenty-four hours.

II. To test vaccine No. II., ten doses were rubbed down with water, and the resulting reddish-brown fluid was injected into the following animals:—

11. A brown ewe	$\frac{1}{2}$ a cubic centimetre.
12. A white lamb	1 " "
13. A young guinea-pig	} $\frac{1}{2}$ " "
14. An old guinea-pig	
15. Two sparrows	1 drop each.

The rest was tested microscopically, and showed the presence of bacilli of Symptomatic Anthrax, with spores. Artificial cultivation demonstrated the purity of this sample.

All the animals inoculated with vaccine No. II., without prior inoculation with vaccine No. I., remained perfectly healthy; the temperature of the sheep varied from 38.9° C. to 39.3° C.

The secondary inoculation of both batches was carried out fourteen and ten days respectively afterwards, as follows:—

III. On the 18th August ten doses of No. II. vaccine were mixed with three grammes of water and injected as follows:—

The white sheep No. 1. (1 c.cm.)	} All these had been inoculated with vaccine No. I. on the 4th August.
The black sheep No. 2 (1 c.cm.)	
The young guinea-pig No. 3 ($\frac{1}{2}$ c.cm.)	
The old guinea-pig No. 5 ($\frac{1}{2}$ c.cm.)	

Guinea-pig No. 4 had died of Pneumonia in the meantime.

IV. On the 20th August twenty doses of No. II. vaccine were mixed with five grammes of water, and four grammes were used as follows:—

The brown ewe No. 11.	} 1 c.cm. each	{ These had been inoculated on the 10th August with vac- cine No. II.
The white lamb No. 12.		
The young guinea-pig No. 13.		
The old guinea-pig No. 14.		

During the next two days the temperature of the ewe and of the lamb went up 0.2° C. The lamb (inoculated in the leg) was very lame, and on the 21st inst. there was a diffused swelling in the neighbourhood of the puncture. On the 23rd the lameness and swelling disappeared. The guinea-pigs had a slight swelling round the puncture, and also went lame.

It will, therefore, be noticed that the protective inoculation, with attenuated virus both No. I. and No. II., when used in unusually large quantities, does not produce important pathological phenomena in sheep or guinea-pigs. I was unable by this method to discover the difference in virulence between the two vaccines.

On the 4th September I undertook control inoculations with virulent material—that is fourteen and sixteen days respectively after the inoculation with No. II. vaccine.

The following animals, supposed to have been rendered immune, were inoculated :—

Sheep No. 1	}	Had been submitted to vaccines Nos. I. and II.
" No 2		
Guinea-pig No. 3		
" " No. 5		
Ewe No. 11		
Lamb No. 12	}	Had been submitted twice to vaccine No. II.
Guinea-pig No. 13		
" " No. 14		

For control the following fresh animals were employed—a grey sheep, a white sheep, a young and an old guinea-pig.

I had received in the summer of 1885 some flesh from a spontaneous case of bovine Symptomatic Anthrax. Some of it was dried and bruised in a mortar with twenty c.cm. of water. Each sheep received one c.cm. hypodermically of this material, and each guinea-pig one-half c.cm.

The result was as follows :—The temperature of the grey control sheep, which before inoculation had been 39.0° C., was 40.3° C. on the 5th Sept., 39.6° C. on 6th, 38.7° on the 7th. It had a tumour near the puncture on the leg, and was very lame. On the morning of the 7th it was dull and ate little. In the afternoon a sanguino-bilious mucus was discharged from the anus; the extremities were cold and the respiration 60. It groaned and grated its teeth continually, and on the morning of the 8th was found dead. The white control sheep died also, showing similar symptoms, on the afternoon of the 8th. All the other sheep supposed to have been rendered immune showed reaction. On the 5th September their temperatures went up to 40° C.—the brown ewe to 41.0° C., the black sheep 40.6° C. The brown ewe died on the morning of the 7th September. *Post-mortem* examination showed hæmorrhagic œdema of the sub-cutis and muscles widely spread round the seat of inoculation. Bloody serum ran from the cut surfaces, and gas in small quantities was found in the muscular structure, which was softened and tumefied. Microscopic examination demonstrated the presence of bacilli of Symptomatic Anthrax. Œdema bacilli were found in the liver only. From this sheep two guinea-pigs and four mice were inoculated. The guinea-pigs died on the 8th inst. of Blackleg, and the mice remained healthy, thus proving that the Œdema bacilli were not the cause of the death of the sheep.

The other three sheep (Nos. 1, 2, and 12) were dull for two days after inoculation, but soon regained their normal condition. An abscess formed at the seat of the inoculation, which burst, and in two cases discharged caseous pus, and in one a bloody, serous fluid. As regards the guinea-pigs, Nos. 3, 5, and 14 were found to have been rendered immune by the former inoculation, and one (No. 13) died of Symptomatic Anthrax on the following day.

Notwithstanding the deaths of two of the subjects of protective inoculation—a sheep and a guinea-pig—the results were perfectly satisfactory, and supported the statements of Arloing, Cornevin, and Thomas as to the efficacy of protective inoculation for Symptomatic Anthrax. It is particularly interesting to find that guinea-pigs, which are exceedingly susceptible to Malignant Blackleg, were rendered immune.

The two fatal cases are not of primary importance in considering the practical utility of protective inoculation, because the animals employed do not belong to the species for which the method is intended; and, again, the doses were not those usually recommended, and were used merely for my own satisfaction, to ascertain whether large doses of attenuated virus were dangerous to life, and to see if a mild attack of the disease would confer immunity. In fact, the results were more satisfactory than I expected.

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I regret that I was unable to ascertain if the guinea-pigs remained immune against further inoculation, because an attendant mixed them with a great number of others, and they could not be identified; but the three sheep (Nos. 1, 2, and 12) were again inoculated on the 15th October, 1886, from virulent material, as well as three control guinea-pigs. On the morning of the 16th all the guinea-pigs were dead (of Blackleg). The temperature of two of the sheep went up on the 17th (No. 1 was 40·5° C. and No. 2 was 40·5°). No. 12 remained 38·9° C. on the 16th and 17th inst.

On the 17th October I received some fresh flesh from a virulent case of Bovine Blackleg, and undertook a forced control experiment by re-inoculating the subjects (Nos. 1, 2, and 12) of the experiment of the 15th, and also a young lamb as control.

The lamb died of Blackleg during the night of the 18th. The sheep remained healthy, excepting the local swelling.

As a further test, Nos. 1, 2, and 12 were again inoculated with virulent material on the 18th January, 1887, and three strong, healthy sheep were used for control purposes. The result will be found below.

Date.	TEMPERATURES OF					
	PROTECTED SHEEP.			CONTROL SHEEP.		
	Sheep 1.	Sheep 2.	Lamb 12.	Grey sheep.	Black sheep.	White sheep.
Jan. 18	40·0	40·2	38·8	40·3	39·8	39·7
" 19	39·8	39·0	38·8	39·5	41·6	41·2
" 20	38·7	39·0	39·3	Died on	Died on the	40·5
" 21	39·6	39·4	38·9	19th Jan. in	20th Jan. in	Died on 21st
" 22	38·8	38·8	38·5	the evening	the morning	Jan. in morn.

An additional argument in favour of protective inoculation is to be found in the fact that, as far as is known at present, animals under its influence do not convey Symptomatic Anthrax to others, neither do they infect pastures, stalls, etc., by their evacuations.

REPORTS ON THE OUTBREAK OF RABIES AMONG DEER IN RICHMOND PARK DURING THE YEARS 1886-7.

THE following reports on Rabies among deer will doubtless prove of interest to our readers. In bringing them to the notice of the Lords of the Committee of Council for Agriculture, Prof. Brown, C.B., remarks:—

In the spring of last year (1887) my attention was called to the existence of a fatal malady among the deer in Richmond Park by Mr. Lupton, the Veterinary Inspector of the district, and from his description of the symptoms which he had observed I was led to suspect that the disease was Rabies, a suspicion which Mr. Lupton shared. At my request two diseased animals, a buck and a fawn, were sent to the Royal Veterinary College, and it did not require much observation of the behaviour of these animals to convert the suspicion into a strong conviction. The question was, however, too important to be permitted to rest without a positive answer, when the means of resolving the doubt were within reach. Accordingly, I forwarded the necessary portions of the diseased organs of the deer, which died soon after admission to the College, to Prof. Victor Horsley, in order that he might apply the crucial test of inoculation; and at the same time I instructed the Chief Inspector of the Department, Mr.

A. C. Cope, to make an inquiry into the circumstances under which the outbreak occurred. Mr. Cope's report furnishes a complete history of the case.

In reference to the means by which the virus of Rabies was conveyed from the diseased to the healthy deer, Mr. Cope's observations are conclusive, as they place beyond doubt the fact that rabid deer did attack and bite their companions. This circumstance explains the long continuance of the disease in the herd.

Generally among herbivora, cattle and sheep, which are most often the subjects of Rabies from the bite of a rabid dog, the disease ceases with the death of the animals which were bitten. But in the instance of the deer it appears that the animals became extremely aggressive when suffering under excitement.

Prof. Horsley's report is a valuable contribution to the literature of the subject, and illustrates the importance of experimental research in dealing with problems in pathology. It may now be asserted without hesitation that the obscure disease among the deer was Rabies, and in any future outbreak the mere observation of the symptoms exhibited by the diseased animals will, in the light afforded by Prof. Horsley's experiments, be sufficient to enable the observer to form a correct opinion as to the nature of the malady.

MR. A. C. COPE'S REPORT.

It has long been known that Rabies can be communicated to nearly all warm-blooded animals by natural or artificial inoculation.

In France, where the statistics of Rabies are very carefully compiled, and where more cases of the disease are reported than in any other country in Europe, 1,539 dogs, 39 cats, 99 cattle, 13 horses, 11 sheep, 9 swine, 1 mule, and 1 goat were returned affected in the twelve months ended July, 1887; no mention is, however, made of deer in this list, and from a letter which I have received from M. Cagny, Secretary to the Central Veterinary Medical Society in Paris, it appears that there is no record of this disease having been recognised among deer in France.

In Germany also the disease is very prevalent, 438 dogs, 5 horses, 92 cattle, 32 sheep, and 72 swine were reported affected in 1886, but here again no mention is made of Rabies among deer.

In a letter which I have received from Prof. Müller, of the Royal Veterinary School at Berlin, he states: "I know nothing about outbreaks of Rabies in deer in Germany. I have asked the Professors of our institute, and have received the same answer. I find in the German literature a remark about epidemics of Rabies among foxes in the years 1823-26, and a notice that some cases of Rabies have been observed at the same time among deer. I have sought information from the Professors of the Academy of Foresters, but there is nothing known about Rabies among deer. Nobody remembers a single case of Rabies among deer. I am convinced that deer can become affected with Rabies when bitten by a mad dog or by a mad fox as any other animal belonging to the mammalia. But such a disease must occur very seldom, because deer are very much inclined to take fright when a dog is near, and escape biting by their fleetness. I therefore doubt the possibility of a large number of deer falling ill by Rabies at the same time. But the circumstances may be different in England, where deer are living, if I am rightly informed, mostly in parks in a half tame condition, and not in forests as in Germany. I am not aware that any case has been observed with certainty in which Rabies has been transmitted from herbivora to herbivora, and I cannot think that deer will bite."

It is evident from these inquiries that Rabies has never been identified among deer, either in Germany or France, and although the disease has never

been recognised among these animals in this country,* there is, I think, very good grounds for believing that it has from time to time made its appearance among the herds of half-tamed deer which are kept in private parks in Great Britain.

I am indebted to Mr. Sawyer, the keeper of Richmond Park (whose experience and knowledge of the habits of deer has materially assisted me in making my inquiries), for the following accounts of outbreaks of disease among deer in this country, in which the symptoms presented bear such a strong resemblance to those observed in the deer in Richmond Park, that I have little doubt that former outbreaks of Rabies have occurred among these animals, and, what is still more interesting, it appears to have been transmitted from deer to deer, a circumstance which is extremely unusual in the herbivora, the rule being that only those animals of a herd which have been first bitten fall victims to the disease.

Among the outbreaks of disease in deer communicated to me by Mr. Sawyer is one which occurred in the Grove Park, the property of Lord Clarendon, in the year 1795. The description of the symptoms is as follows:—"Some of the animals when they first showed evidence of being unwell seemed giddy, turning round, and sometimes running forward, as is often seen in a deer when shot before it falls. Others seemed quite stupid, crept about by themselves, and were found dead, the skins upon the foreheads of some, and upon different parts of the body of others, being quite thin and parched."

It would appear that at the same date a disease was prevailing among the deer in Windsor Great Park, and that it lasted for some time, for in a letter from an ancestor of Mr. Sawyer's to the keeper at Cassiobury Park in 1798, he says, "I am sorry to hear that the distemper has destroyed so many deer at Cassiobury, and that it should remain so long in Windsor Great Park."

In 1872 an outbreak of disease appeared among the deer in the park at Eaton Hall, Cheshire, the property of his Grace the Duke of Westminster. The symptoms described to Mr. Sawyer by William Roberts, the park keeper,

* This statement is not correct. In 1856, according to *The Veterinarian* (Vol. xxix., p. 341), Rabies was recognised and described as affecting a herd of deer at Stainbrough, near Barnsley, coincidentally with the prevalence of the same disease among dogs and the wounding of people by them. Nearly one hundred deer died, and they presented the symptoms described in the above report, especially their aggressiveness and their worrying and wounding each other. The following allusion is made in *Rabies and Hydrophobia*, (p. 48):—"In England, in 1856, Rabies showed itself among dogs and in a herd of deer to such a serious extent at Stainbrough, near Barnsley, as to excite the alarm of the inhabitants of that locality, and to attract the attention of medical men. The disease began to exhibit itself on a small scale in a herd of deer in the latter part of last or early in the present year, immediately after one or more mad dogs had been seen roaming about the locality, one of which is supposed to have communicated the contagion. Nearly one hundred deer have already fallen victims to its effects. While in a state of disease, these otherwise innocent and playful animals foam at the mouth, worry each other like dogs, and tear off each other's hair and flesh, and, when placed in a state of confinement, bite at whatever comes within their reach. With these symptoms the above number have already died, and others are being continually affected by the disease. Five or six dogs have also died at the same place, exhibiting the same symptoms. Until recently the disease was not suspected to be Rabies, but attention has been particularly drawn to the matter, through a child belonging to one of the workmen having been bitten by one of the dogs. This caused an alarm, which led to a medical gentleman being called in; and, on investigating the circumstances, he has pronounced the disease to be Rabies. In his official capacity of Medical Officer of the Barnsley Local Board of Health, he has issued a timely notice or caution to the inhabitants, in which he states that there cannot be any reasonable doubt that Hydrophobia has manifested itself to a serious extent in the neighbourhood, and he calls upon all persons to be on their guard to protect themselves and their families from the infliction of this terrible disease."—ED. V. J.

are in many respects identical with those observed in the deer in the recent outbreak in Richmond Park. "The park at Eaton Hall contained about 400 deer and 250 sheep. The first animal found affected was a buck. This animal had broken his horns, which were hanging by the velvet. Three days after he was found dead. The disease appeared among the herd in June, 1872, and continued for a very long period, until about 350 died. The first symptom noticed was pointing their noses in the air and sniffing, next day they were seen running at other deer. They were then seen to run at other deer and butt and fight at the trees, in fact they drove at anything dead or alive, until they rubbed the skin clean off their foreheads, in some instances until the bone was left bare, and they invariably died after an interval of from two to eight days."

Again in 1880 cases of apparent madness occurred among the deer at Swythamley Park, Staffordshire, the property of Mr. Philip Brocklehurst. "Some of the animals were seen charging furiously and endeavouring to bite any other deer which approached them, and even chased hares and rabbits. Seeing the keepers watching them, these animals, usually so timid, rushed at the men like wild bulls, and were shot.

"On examination, no bite or wound was discovered, but the top and back of their heads had the hair rubbed off, and looked puffed and swelled, having the appearance of a leather football."

About six years ago the deer in Cassiobury Park (which belongs to the Earl of Essex) were affected with a disease which presented the following symptoms:—"The affected animals ran about the park in a frantic manner, rushing against trees, and thereby injuring themselves; they attacked other animals furiously, and many of them died."

In none of these outbreaks does Rabies appear to have been suspected, nor was there any evidence to show that Rabies was known to exist in the districts where they occurred. It must, however, be borne in mind that rabid dogs wander away from their own districts and not unfrequently roam about the country without their presence being known. Most of the parks in which deer are kept have their gates left open, or have footpaths through them which would make it an exceedingly easy matter for a dog to pass in and out of a park without being observed.

The outbreak which I am now about to report upon occurred among the deer in Richmond Park, in the county of Surrey, towards the close of a serious outbreak of Rabies which existed among dogs in London and its suburbs.

Richmond Park is one of the royal parks; it is 2,300 acres in extent, and is surrounded by fences or walls. There are five carriage entrances into the park, and about 1,200 deer are usually kept there, besides a certain number of grazing cattle. Most of the deer are of the kind known as fallow deer, but in a remote part of the park there are a few of the larger kind known as red deer. The park is open to the public at all times of the day, but the gates are closed in the evening. It would, therefore, be easy for a dog to enter the park at any time during the day, and, if fleet enough, bite a certain number of deer, and make its exit without being seen.

It should here be stated that it is the habit of the deer to separate into herds of about one or two hundred; further, that these herds rarely leave the part of the park in which they are accustomed to pasture, and it is a noticeable fact that the animals of these respective herds rarely intermix. This habit of segregation on their part will account for the disease being confined to the infected herds, as will hereafter be seen.

The first intimation of the existence of any disease among the deer was the discovery by the keepers, towards the end of September, 1886, of a doe, which was suckling a fawn, staggering about in the herd pasturing near the

entrance gate at East Sheen. The animal was killed, and it was then found that the hair was rubbed off the head, giving it the appearance described in the accounts of the outbreaks at the Grove in 1795, at Swythamley, and at Eaton Park. (Mr. Sawyer informs me that when a doe has a fawn she will attack a dog, and under these circumstances it is quite possible that this and other does in the herd may have been bitten by a stray rabid dog.)

Some days after the death of this doe, the keepers noticed others of the deer in the same herd behaving in a very erratic manner. At first they were constantly rubbing their heads against the stems of trees or on posts, and with such force that their hair was in some cases entirely removed. They were frequently seen to be biting the skin about their shoulders and bellies until they were perfectly raw, tearing out their hair, and at times they charged at the other deer.

As a rule the animals appeared to feed up to the time of their death, and when the keepers opened them they found within the stomachs pieces of stick, and other things which they would have ordinarily refused for food. All the animals were represented as showing the same symptoms, some being very violent before dying, and they usually died within two or three days of being first observed to be unwell.

It was at first thought that the animals had died from eating some poisonous food. The contents of the stomach were analysed on the suggestion of Mr. Lupton, the Veterinary Inspector of the Local Authority, but no poisonous food or substance could be found therein. The pastures were also searched for poisonous plants, but without success. The disease spread slowly through the herd, the animals dying at the rate of four a week; and by April, 1887, 160 had died, all presenting decided symptoms of some form of nervous disease, which in many instances ended in paralysis, and always in the death of the animal.

At this period Mr. Lupton suggested that the attention of the Department should be called to the outbreak, and on visiting the park on April 7th I found, first, the disease had up to that time been entirely confined to the herd grazing nearest to the East Sheen gate; and, secondly, that, although the herd had been removed from their former pasture, and had been enclosed in another part of the park, where their mode of feeding had been entirely changed, the animals continued to die at about the same rate and with the same symptoms. From this fact I concluded that the disease had not originated in the feeding of the animals. When watching the herd I observed that they presented several of the symptoms which are described in the outbreaks previously referred to. One of the earliest indications of their being affected was that of throwing the head back and sniffing the air, as described in the Eaton Hall outbreak. After a few moments they would start at a gallop, as though they had been suddenly alarmed, and they as suddenly stopped and again commenced to graze.

It being impossible to devote sufficient time in the park to study the symptoms and nature of the disease, a buck and fawn were forwarded to the Royal Veterinary College; the fawn, however, died four hours after admission. A *post-mortem* examination was made of this animal. The first stomach was found to contain a fair amount of the usual food; mixed with it was a considerable quantity of hair. The vessels of the brain appeared to be somewhat congested. The medulla of this animal was taken to the Brown Institution, where, under the direction of Professor Horsley, rabbits were inoculated, which died of Rabies.

The buck became so wild and violent that the persons in charge were unable to enter the loose box in which it was placed. This animal died two days after its arrival, and other rabbits were inoculated with portions of its spinal cord, with the same results as in the former case.

On April 18th another buck was sent to London; this time to the Brown Institution. It was placed in a loose box, and presented the same violent symptoms as the animal that died at the Veterinary College; but in this case paralysis of the limbs set in before death.

These animals, usually so timid, would rush at any person looking at them, and bite at a broom or a stick if put through the bars of the door.

Although the inoculation of the rabbits resulted in their death from paralytic Rabies, I suggested to Professor Horsley the desirability of inoculating a dog to see if true Rabies could be produced in that animal. Accordingly on May 26th, a dog was inoculated with part of the spinal cord of another affected deer which had been sent up from Richmond Park. Eleven days after the inoculation, *i.e.*, June 6th, the dog presented symptoms of Rabies, and died on June 12th; the autopsy was conducted by Professor Horsley, who found all the characteristic symptoms of Rabies present.

It having now become certain that the disease among the deer in Richmond Park was true Rabies, it was considered desirable to stamp out the disease as soon as possible. The animals were still confined to the enclosure in which they had been placed, and Mr. Sawyer was advised to forthwith shoot any animal presenting the least indication of the disease. This was accordingly carried out.

The next feature in connection with this outbreak was the appearance of the disease in the month of June in the herd which had been grazing in the park next to the infected herd. As soon as the disease was detected in this second herd the whole of the animals were driven into an enclosure, and this time divided into small lots. The animals in this herd suffered in a larger proportion than the previous herd, and the disease continued with more or less virulence until September 24th, by which time 264 animals had succumbed to the disease. Since that date no further cases have been reported.

There are some points, however, in connection with this outbreak which are worthy of consideration, and this being the first occasion in which Rabies has been identified in deer, a description of the symptoms of the disease will not be devoid of interest.

The earliest symptom observed in most cases was that of throwing their heads back on the shoulders and keeping their noses pointed to the sky; the animals are then seen to make sudden starts, and gallop right away from the rest of the herd.

Next they begin to rush at other deer, also at posts, rails, trees, or other fixed objects. When rushing at the latter they bruise their heads between the horns, and rub off the hair in patches. This may be looked upon as a prominent sign in the early stages of the disease.

Subsequently, instead of being timid, they become unusually bold, charging at other deer, and causing the greatest alarm in the herd, and if kept in close confinement they will rush at persons or objects brought in their way. At times a fawn will be seen to pursue and bite at old deer in a manner quite unnatural.

After a few days' illness the animals invariably die, some presenting violent paroxysms, while in other instances paralysis of the limbs becomes most marked before death.

Further, it is now clearly established that Rabies can be transmitted from herbivora to herbivora by the ordinary means of infection—*viz.*, the saliva.

This assertion is, I think, warranted by the fact that, although these animals were isolated for a period of six months—a time far beyond the recognised period of incubation in Rabies—the disease continued to progress in the herds after all possible means by external infection had been cut off.

The most important question, however, which arises out of this outbreak is the means by which the virus was transmitted from animal to animal.

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It has been found that, although the deer attempted to bite one another, they did not really penetrate the skin with their teeth, but only produced sores thereon; at the same time the diseased animals left a certain amount of saliva on the skins of those which were bitten. It was observed on several occasions when a healthy deer had been bitten by a rabid one that the animal bitten licked the spot, no doubt with the desire to soothe the irritation caused by the pinch or bite, and Mr. Sawyer informed me that it is a common practice for deer to lick the coats of other deer.

As a means of testing whether the disease could be communicated by the bite, a rabid doe was placed in a shed with a healthy buck, which had been previously entirely isolated from the infected herds. Immediately the rabid doe was placed with the other animal she flew at it like a dog, and bit it about the ears and neck; the healthy deer was carefully watched, and on the morning of the nineteenth day it showed symptoms of disease, it became furious, and died in a very short time. The experiment conclusively proves that Rabies can be conveyed by the bite of the rabid herbivora to another animal, and was a means of transmitting the infection in this outbreak; the absence of upper incisors in these animals must have rendered this method of inoculation very uncertain in its result, and no doubt accounts for the slow progress of the disease among the herd, a circumstance which throughout constituted the most peculiar feature in this outbreak.

There still remained another means by which the disease might have been transmitted—viz., that of feeding on pastures infected by the saliva of the diseased animals. This view is, however, negated by the following experiment.

Four large red deer were enclosed with one of the infected herds of fallow deer and fed on the same herbage on a circumscribed area, but none of the red deer contracted the disease from eating the infected food. Nor were they infected by the saliva. This may be accounted for by the circumstance that the red and the fallow deer do not associate closely, and did not lick or bite one another.

Finally, in reference to the progress of the disease in these herds, it is interesting to note that the greater mortality in the early part of the outbreak was among the does and fawns; this is accounted for by the bucks protecting themselves with their horns from the attacks of the rabid does. Simultaneously with the shedding of their horns, the mortality increased among the bucks, and during the time the horns of the bucks were in velvet this continued.

ALEXR. C. COPE.

December 7th, 1887.

REPORT BY PROFESSOR VICTOR HORSLEY, B.S., F.R.S., ETC., PROFESSOR
SUPERINTENDENT OF THE BROWN INSTITUTION, ETC., ETC.

The following is a brief account of observations and experiments made by myself upon certain deer sent to the Brown Institution from the infected herd in Richmond Park, by the courtesy of Mr. Sawyer, to whom I am also indebted for much information respecting the outbreak, and tissues from the same animals, submitted to me for examination and opinion by Mr. Cope.

I have watched the course of the disease as described by Mr. Cope in the foregoing report in four of the affected animals, and will now proceed to enumerate such symptoms as were exhibited by each as far as they could be observed in a loose box, the only accommodation possible at the Brown Institution.

I. CLINICAL REPORT.

DEER No. 1.—Admitted into the Brown Institution from Richmond Park, sent by Mr. Sawyer, at 6 p.m., 18th April, 1887. When removed from the

box in which it was brought the animal was very excited, but evidently very ill.

19th April, 9.30 a.m.—When seen this morning it had not fed since admission, and was lying on the ground apparently but semi-conscious. The position was peculiar, namely, the legs were stretched straight at right angles to the trunk, while the head and neck were strongly retracted (tonic spasm?).

When touched it staggered up on to its feet, markedly paretic in its hind limbs. It was nevertheless still very excitable, for it flew at the stick with which I touched it with much fury. In doing so it fell down owing of course to the commencing paralysis.

20th April. Animal weaker, but still aggressive. The hind legs were more obviously paralysed. Occasionally there was a general tetanoid spasm specially marked in the hind quarters. This spasm fixed the animal in a remarkable position, in which, while the forelegs were vertical, the hind limbs were stretched far back and partly separated. The same attitude may often be seen in a similar stage of the disease in a rabid dog.

21st April, 10 a.m.—Temperature in the rectum 41° C. (about 105.8° F.). The animal was now almost completely comatose; it lay on its left side with marked opisthotonic contraction of the muscles of the back. The least touch caused tetanoid spasm of the limbs in extension. There was, in addition, a constant rhythmical chewing movement of the jaws. (It, however, had not eaten anything since admission.) Sensation to pain appeared dulled. At 11 a.m. the animal suddenly died. (Cardiac failure probably.)

POST-MORTEM EXAMINATION.

Immediately after death.

Central Nervous System.

Brain.—Appeared perfectly normal. *Spinal Cord.*—Vessels moderately distended.

Lymphatic System.

Serous Membranes (i.e., Pericardium, Pleuræ, Peritoneum). Perfectly normal.

Circulatory System.

Heart.—Normal. *Blood.*—Dark and fluid.

Respiratory System.

Larynx.—Full of tenacious mucus. Marked capillary congestion of the mucous membrane, with slight œdema of the larynx, epiglottis, and the base of the tongue. *Trachea.*—Venous congestion. *Lungs.*—Very pink; doubtful if more than normal vascularity.

Alimentary System.

Pharynx.—Normal, but full of mucus. *Gullet.*—Normal, but full of mucus. *Stomach.*—Full of normal food. The reticulate mucous membrane was very pink, with distended vessels. *Intestines.*—Both the large and small intestines were nearly empty, the former only containing a little watery bile-stained mucus. *Liver* was normal on section, save that scattered through its substance were numerous small circular tumours, pale and yellowish white on section. *Spleen.*—Normal. *Pancreas.*—Normal.

Renal System.

Kidneys.—Both a little congested. *Bladder*.—Distended with urine.

DEER No. 2.—Received dead at the Brown Institution on 26th May, 1887.

POST-MORTEM EXAMINATION.

In this all the organs appeared normal except the *larynx*, which, as in the former case, was congested.

From the spinal cord of this animal rabbits Nos. 5 and 6 and dog No. 1 were inoculated by trephining.

DEER No. 3.—Admitted into the Brown Institution on 1st June, 1887. This animal, a doe, is of special interest, inasmuch as it is the one referred to on page 9 of Mr. Cope's report as having bitten deer No. 4, *vid. infra*. Moreover, being pregnant, it afforded the invaluable opportunity of testing the asserted power of the rabic virus to pass from the maternal to the foetal circulation through the placenta.

1st June, 1887.—Animal extremely aggressive, rushing fiercely to the door of the stall whenever any one approached it, and savagely seizing with its teeth any object presented to it. The hind legs were very much paralysed, and this may have been rather unusually marked at this stage in this particular instance, since this animal had during the previous eighteen hours violently attacked deer No. 4, and consequently it may have become more or less exhausted. This is the more probable, because on the 2nd June, 1887, it was found dead, having succumbed during the night probably to syncope.

POST-MORTEM EXAMINATION (about 6 hours after death).

Rigor mortis well marked.

Central Nervous System.

Brain.—Moderate, but general congestion. *Spinal Cord*.—Ditto.

Lymphatic System.

Serous Membranes.—Normal, etc. The rest of the organs in this case presented the same appearances as in No. 1, save that there were no tumours in the liver, these being clearly accessory. Most noteworthy is that there was to be seen, as in the former cases, the same congestion and œdema of the larynx, which was full of tenacious mucus. The lungs were distinctly congested, and in places collapsed. The uterus contained a foetus about two feet in length. From this foetus two rabbits were inoculated, *vid. infra*.

DEER No. 4.—Admitted into the Brown Institution 20th June, 1887. This animal, a buck, had been separated from the herd for three months till the 1st June, when, as described by Mr. Cope, Deer No. 3 was placed with it and attacked it severely. On the 19th June (thus nineteen days, incubation period) it showed the premonitory symptoms, and was at once forwarded to the institution.

20th June, 1887.—Animal very excitable and most aggressive. It made attempts to eat and drink, but it was very difficult to determine whether it actually swallowed food.

21st June.—Worse, much more vicious. It stood with its head thrown back, the eyes staring, and it charged everything which suddenly attracted

its attention. This day I observed for the first time in these animals a genuine pharyngeal spasm on its attempting to swallow water. It plunged its muzzle deep in the water, made champing movements with its jaws, and tried to swallow. The larynx could be seen rising in jerks just as in the human being, while the water ran out of the angles of the mouth. It did not eat.

22nd June.—Paresis set in this day. Every charge the animal made was accompanied by staggering, and not infrequently fell, the hind quarters, as in the other cases sinking, and the hind limbs collapsing.

23rd June.—Animal died in the night.

POST-MORTEM EXAMINATION.

As in Deer No. 3, save that the brain and spinal cord were more intensely congested.

Microscopical examination of the tissues revealed the well-known changes that have been observed in man, the dog, etc., viz., extreme congestion, hæmorrhages, and extravasation of leucocytes, etc.

II. PATHOLOGICAL AND EXPERIMENTAL REPORT.

The outbreak of Rabies among the deer in Richmond Park was, as detailed in Mr. Cope's Report, investigated by him, and he received two animals at the Veterinary College for examination.

From these two animals the medulla oblongata was removed and sent to the Brown Institution. In each case a portion of the medulla was crushed in sterilised bouillon, according to the method described by M. Pasteur, and a small quantity injected into the subdural space of two rabbits.

The four rabbits thus inoculated, all died of typical rabies, the incubation period varying from ten to fourteen days. The post-mortem appearances were most characteristic, as I have elsewhere described to be found in these animals when dying of this disease. (Report to the President of the Local Government Board of a Committee of Inquiry into M. Pasteur's treatment of Hydrophobia.)

Although the malady affecting the deer was thus proved to be rabies, I consented at the request of Mr. Cope to complete the proof by testing the virus on a dog.

I took therefore the medulla oblongata and cervical spinal cord of Deer No. 2, and inoculated therefrom (also by trephining two rabbits and one dog.)

The rabbits died just as Nos. 1, 2, 3 and 4, of typical Rabies, with the rather longer incubation period of fourteen or sixteen days. The post-mortem signs also were quite characteristic. The details of the dog's illness may with advantage be briefly alluded to since this is the first instance in which the transmission of rabies has been effected by inoculation from deer to the rabbit and dog.

Dog No. 1.—Small, young adult, black and tan terrier inoculated by trephining on 26th May, 1887. It remained perfectly well until the 7th June, 1887, *i.e.*, eleven days' incubation, when it was noticed to be very excitable and restless, jumping up to the top of its cage, snapping at everything, and eating the straw of its bed. It furiously attacked two dogs in the same cage after quietly but energetically licking them, they being evidently alarmed at it. The dog No. 1 was much exhausted after these combats, but its viciousness was increased. Its bark, already hoarse, soon developed the well-known false termination. The disease then ran its usual course during the succeeding four days, the dog remaining savage to within the last two days, when Paralysis of the hind legs set in, and death by coma followed.

POST-MORTEM EXAMINATION (about eight hours after death).

Rigor mortis well marked. No organ presented any marked change, save the following:—

Respiratory System.

Larynx, moderately congested; *trachae*, ditto; *lungs*, greatly congested, being of a dark red colour

Alimentary Canal.

Tongue, dry; *pharynx*, slightly congested; *stomach*, well-marked capillary congestion of the mucous membrane; *contents*, watery mucus, coffee ground material (evidently blood), and a quantity of hay. The evidence was thus rendered quite conclusive as to the real nature of the malady from which the deer were suffering.

EXPERIMENT WITH THE FÆTUS OF DEER No. 3.

The question whether the virus of an acute specific disease can pass through the placenta from the maternal to the foetal circulation is yet so indeterminate and yet so important that any observation on the point, negative though it may be, is worth recording.

On laying open the uterus of deer No. 3, there was found a healthy foetus about two feet long quite dead, but its decease evidently had only occurred on that of the mother.

On dissection nothing was observable in the organs, but the spinal cord being removed, a small portion was crushed in bouillon, and inoculation practised therewith on two rabbits.

Nos. 7 and 8 on 2nd June, 1887.

3rd June, 1887.—One rabbit, No. 7, unfortunately died of Septicaemia 26th November, 1887. The other rabbit, No. 8, lived in perfect health till this day, when it was inoculated in series, and succumbed with the usual symptoms.

It will thus be seen that these experiments were negative in their results, but at least it is evident that rabbit No. 8 received no virus from the foetal deer. This question of the transmission of the virus through the placenta can only be definitely decided when a large number* of independent observations have been collected together.

(Signed)

VICTOR HORSLEY, F.R.S.

PUTREFACTIVE ORGANISMS.

At the annual meeting of the Royal Microscopical Society, the Rev. Dr. Dalinger, F.R.S., delivered an address on the cycle of putrefactive organisms. There can be no longer any doubt that the destructive process of putrefaction is essentially a process of fermentation, and that the fermentive organism is as absolutely essential to the setting up of destructive rotting or putrescence in a putrescible fluid as the yeast plant is to the setting up of alcoholic fermentation in a saccharine fluid. A sterilised solution of proteine in absolutely purified air will remain for any length of time without trace of decay; while inoculation with the slightest atom from a putrescent source will shortly cause turbidity and putrescence throughout. It has been commonly supposed that the exciting fermentive agency is wholly bacterial. No doubt the leading agency of this kind is *Bacterium termo*, and it is impossible to find a decom-

* A few observations are already recorded by Perroncito and Carita, and Bardach in the "Annales de l'Institut Pasteur, 1887."

posing proteinaceous (or albuminous) solution at any stage without finding this form in vast abundance. But in following the processes of destructive fermentation in large masses of tissue lying in water at an average temperature it is seen that the destructive process is the work, not of one organism but of many, and that they succeed each other in a remarkable manner. Apparently each set in turn take up the work at a particular stage, feed and develop after their kind, carrying on the destructive process, and at the same time giving rise to conditions suitable for the immediate successor in the cycle; and there is an adaptation of form, functions, mode of multiplication, etc., to the conditions at that stage. The aim of nature in this action is the ultimate setting free of the elements locked up in large masses of organic tissue, and so sending back into nature of the only material of which future organic structures can be composed. Beginning with *Bacterium termo*, this minute creature appears in the fluid surrounding a piece of decaying flesh or fish and increases with astounding rapidity, clothing the tissue as with a skin, noxious gases being at the same time thrown off. In the course of a week or more, dependent on the period of the year, there is usually a development of spiral forms, which likewise invest the rotting tissues, but are always in movement. These bring about a softness and flaccidity in the decomposing tissues. After this a further series of organisms arises, one of a limited set of putrefactive monads of which Dr. Dallinger has specially investigated the life history. They multiply with astonishing rapidity, and by some concurrent changes the decaying mass becomes more and more yielding. These are followed by other forms that at first swim and gyrate and glide about in the decomposing matter. One of these forms, *Heteromita rostrata*, has a long fibre or flagellum that gracefully trails after it as it swims. At certain periods of its life this form anchors in countless billions all over the fermenting tissues, and coiling the fibre bring the body to the level of the point of anchorage, and then shoot it out with lightning-like rapidity, bringing it down like a hammer on some point of the decaying mass. It rests for a second or two, and then repeats the process. This goes on with a sort of rhythmic movement all over the rotting tissue, and the result is to gradually break it up and cause it to disappear. Other forms are known which do similar work, some even more powerfully. In a period varying from one month to two or three the entire mass of organic substance with which we started has disappeared and the decomposing fluid is exhausted, nothing being left in the vessel but slightly noxious and pale grey water, charged with carbonic acid, and a fine buff-coloured impalpable sediment at the bottom. Thus Dr. Dallinger is led to conclude that the most important of all ferments, that by which nature's dead organic masses are removed, is complex, and includes the successive vital activities of a series of adapted organisms which are for ever at work in every region of the earth. Our acquaintance with the detailed changes thus brought about is but imperfect as yet, and the view thus sketched opens out a large field for research which may have most important sanitary bearings. Towards the conclusion of his address Dr. Dallinger referred to the vital processes of the very simplest and lowest life forms as being as much directed and controlled by immutable laws as the most complex and elevated. "The irrefragable philosophy of modern biology," said the president, "is that the most complex forms of living creatures have derived their complexity from slow and progressive variation and survival from the simplest forms. If, then, these simplest forms of the present and past were not governed by the same accurate laws of life, how did the rigid certainties that govern the more complex come into play?" Consequently there is no room in philosophy for, as there is no fact really supporting, the supposed transformations of one kind of animal into another *per saltum*.

Report on a Professional Visit to the Continent. 183

REPORT ON A PROFESSIONAL VISIT TO THE CONTINENT.

[The following is another Report, in reality the first, from First Class Veterinary Surgeons DUCK and F. SMITH, addressed to the Principal Veterinary Surgeon to the Army, on a Professional Visit to the Continent in 1887.]

SIR,—We have the honour to submit for your information a further report on what we saw during a recent visit to France, Germany, and Belgium.

The report is by no means so complete as we would have liked, as, both in France and Germany, we had great difficulty in seeing what we wished to, and had it not been for letters, kindly furnished by yourself, and introductions given us to the Military Attaché at Berlin, we would have seen but little, and, as regards Germany, positively nothing. In visiting Paris we were unfortunate in finding the majority of the troops absent at manœuvres.

Our subject is best divided, for purposes of description, into the following heads:—1. Horses; 2. Stables; 3. Saddlery; 4. Forage; 5. Forges; 6. Shoeing.

HORSES.

French Army.—We saw a portion of a Cuirassier regiment in Paris; the horses were poor in condition, and showed a decided want of breeding. It appeared to us either that they were starved or had been worked off their legs. They were standing tied up outside the stable, and not a move or sign of life in them. They were by no means well groomed. The officers' horses were decidedly of a better class.

We visited a Chasseur regiment at St. Germain. The horses were small, about fifteen hands and a half inch, light, in fairly good condition, and showed a certain amount of breeding. In a camp at this suburb we saw the horses of the Ecole Militaire. These had lately been brought here, owing to an outbreak of Paralysis in the stables in Paris. They were a good all-round lot. The chargers for cavalry were excellent, showing bone, substance, and breeding; those for artillery were heavier and coarser, but still very good. At Vincennes we saw a few field artillery horses; they were a good-looking lot and suitable for their particular purpose.

German Army.—At Cologne we saw a Cuirassier regiment which had just marched in from local manœuvres of a severe nature. The horses were a fine lot—big animals, rather spare, but in sound, hard-working condition. They were about 15·3 in height, from half to three-parts bred, well-shaped, and good shoulders.

The remounts were a promising lot of powerful horses, and fairly well bred.

We saw the horses of two field batteries which had also lately returned from manœuvres. They were wearing blankets at mid-day stables, though a warm day. It was explained that this was the system until the horses were thoroughly dry. They were generally in fair condition: a few thin, others, again, gross. We looked in vain for the sealed pattern English artillery horse; he did not exist. What we saw were well-bred animals, to our mind decidedly light for artillery purposes, and which would have been classed by us as horse artillery detachment or cavalry horses. We could see no wheelers. We were much impressed by the want of substance in these horses, and still more surprised when, on the following day, we saw them stepping lightly along with a field gun behind them, and making no more fuss about it than our horses do. It appeared to us that the German gun is lighter; the carriage must be, and the limber boxes appeared half the size of ours. The gun detachment was marching.

At Bonn we saw a regiment of Hussars which had that morning returned from manœuvres, where they had evidently done severe work. The horses were about fifteen hands. The majority were well bred, many being per-

fect types of light cavalry troopers. They were well-groomed, and gave one the impression of being thoroughly looked after. We observed that many of their legs and fetlocks were filled, proving beyond doubt that these horses had done, as represented, very severe work.

Belgian Army.—In Brussels we saw a regiment of Guides, the horses of which all come from Ireland. It can be understood, therefore, in going round these stables, we were looking at the same class of animal found in our own regiments, and evidently the same care and judgment is exercised in their selection.

We had also an opportunity of seeing a Battery of Artillery. The riding-horses came from Ireland, the draught-horses are all Belgians from the Ardennes district, smaller than our own, showing more substance than the German, but wanting in quality; nevertheless good, useful draught-horses of roan colour.

Respecting the price paid by these various armies for their horses, we found it very difficult to obtain exact information.

The age at which horses of the different armies join the service is very important; they are received into regiments at five years old, but their military work does not commence until they are six. We need not dwell on the sound economy and utility of this admirable rule.

There appears to be no fixed age at which horses are cast. In Germany they are got rid of when used up. We were shown, at Cologne, a horse which had served in the war of 1870-71, and was still doing his duty well.

In comparing the merits of horses of the respective armies, especially the French and German, we have no hesitation in saying, judging from what we saw, that the German horses—both light and heavy—are infinitely superior to the French.

Before concluding this subject, we would draw particular attention to the temperament of all horses we saw on the Continent. We were much impressed by the quiet manner in which they behaved, both in and out of the stable—no noise, kicking, or rattling of chains; it was almost impossible to believe that one was in a troop-stable full of horses. We observed the same thing outside, and we were informed that broken legs were rare. It may be explained that the difference in breed between French and German horses and our own will account for this, but we observed exactly the same thing in Belgium, where, as we have noticed, the horses are bought in the same market as our own. There is only one explanation we can offer, and we feel it to be the true one, viz., the men are much quieter with their horses than the average English trooper is, and their system of training is slower and longer than ours.

STABLES.

French Army.—In Paris we saw the stables evacuated by the horses of the Ecole Militaire. It was a very wide building, with no less than four rows of stalls running the length of the stable. The men's rooms were overhead, but light and roof ventilation were provided by a rather ingenious arrangement.

The stalls were narrow, except for valuable troop and officers' horses. They were divided by bails hung from above, no pillars existing, as with us. The arrangement for freeing the bail was the same as we use, but we noticed a good plan of preventing the chain below the hook hurting a horse which may get over the bail. The whole part is protected by a wooden or iron cylinder, 1½ feet long, which completely envelopes the chain and prevents it injuring the horse.

The mangers were of brick, with a small enamelled iron trough. They were very high, and decidedly bad. The hay-racks were wooden, placed above the head, and ran the length of the stable; they were highly objectionable. Flooring

irregular, large square-cut stones; drainage surface, light good, but ventilation insufficient for four rows of horses. It was in this stable that an outbreak of Paralysis had occurred of a very serious nature. Out of twenty-eight attacked eleven died.

A Cuirassier stable was built on much the same principle as our own, with the men's rooms overhead, but the horses placed the length of the stable, and only two between opposite windows. This stable was very high, and fairly well lighted and ventilated. The odour on entering was very marked, and wet and dirty-looking bedding was down; the drainage, mangers, racks, etc., much the same as in the last stable.

The Chasseur stable at St. Germain was much the same as the last, but here we learned the astounding fact that in the French cavalry the building, in stable parlance, is only "mucked out" *once a month*. Our visit happened to fall on that day, and the stench was abominable. Ordinarily they remove nothing but the droppings, which can be picked out, and cover over the mass with clean straw, each day repeating the operation until the horses are left standing on decomposing filth five or six inches in thickness. We were informed that the stables are thoroughly cleaned and disinfected once a year. Wooden pitchforks are used, of which we think highly; no barrows, but litters carried by two men for conveying away stable refuse.

The temporary stalls in the camp at St. Germain were good and clean, floor of earth, litter down as usual. We noticed a very simple arrangement for freeing the bail, which might be adopted with advantage, at any rate in temporary stables. A wooden hook has a hole at one end through which passes the rope from above. The other extremity of the hook is held up against the rope by a ring; when the ring is pulled up the bail is released.

German Army.—Cologne Cavalry stables were fair, closed roofs with lofts overhead, drainage surface, lighting and ventilation indifferent, bails and posts used, and horses with heads to outside wall. Artillery stables decidedly bad; dark, and absence of ventilation. The building was an old convent. The officers recognise that the stables are indifferent. The bails are hung very low, by means of a hook passing into a slot in the post, with no means of releasing it, and straw mats hung from them. This appears to be done more for appearance than protection, and only one battery had it. This army only "mucks out" once a month.

The Cavalry stable at Bonn was much the same as the others; there was, however, an attempt at roof ventilation; all windows, as in the other stables, closed.

Belgian Army.—Brussels Cavalry stables are very fair. We object, however, to four rows of horses between opposite sources of air; the stables were wide, light, lofty, and fairly-well ventilated. The fastening of the horses, and we may say the French and Germans use the same, is a sliding ring on a bar which runs down in front of the manger to within a foot of the ground. It appears to make no noise, and is a permanency.

There are no heel posts in the stable. The bails are hung from above, the method of releasing is self-acting, simple, and can be made by any farrier. A piece of iron is turned somewhat in the shape of a sugar tongs, curving in at the ends. Into this is placed a wedge of iron attached to the chain holding up the bail. As long as there is no great weight on the bail the support is perfect, but if a horse gets over and attempts to rest on it the weight draws the wedge through, and the bail drops. In this army we also find that "mucking out" once a month is considered sufficient.

Infirmaries Stables.—In France these were very fair, boxes were sufficient, and one always fitted up for slinging. The arrangement above is peculiar, being an iron cradle on wheels, so that the patient can be drawn backwards or forwards. Irrigation arrangements also exist by the side of the slings.

The pharmacy is well fitted up, and instruments are freely supplied. There appears to be no infirmary stables in the German Army, except for suspicious cases of disease. We saw the lame horses being treated in the troop lines. In Belgium the infirmary stables were supplied with every convenience. We will deal more fully with this subject in our professional report.

SADDLERY.

We have one or two important points to draw particular attention to under this head.

French Army.—We saw the Cuirassier saddle possessing an iron front arch and a wooden rear. It had thin pannels, and the saddle was placed on a blue, thick blanket in four folds. There was no cantle to the saddle, and we observed that a flat folded cloak behind had the centre strap suspiciously close to the spine; the stirrups were small; girth straps divergent, one attached to the front and one to the rear arch; the girth was of cord; bit lighter than ours and no boss, snaffle double-hinged, and connected by a chain fastened with a T above. The Chasseurs use a wooden saddle placed on a blanket. No cruppers used.

German Army.—Cuirassier saddle. We observed particularly how well the horses carried their girths, and on enquiry found it was due to the girth (string) having three straps, one going to each arch and one to the centre of the side board. The saddle was a wooden tree strengthened with iron, covered with wide linen panels, with but little stuffing, the saddle flaps cut square. At the back of the seat was stitched a roll of leather; the cantle was cut low, but the cloak and forage net were buckled on the *top* of the arch and rested here, supported by the leather roll previously described; the side-boards projected but a short distance behind and nothing rested on them. The wallets were of considerable size and carried all the man's kit, one of the wallet straps passes through a girth tab; breast plate carried, but no crupper. Under the saddle was a blanket about 7 lbs. in weight, white colour and of good thick material; they say they wear for years. In folding the blanket (it takes two men) it is first well shaken, then folded in three, lengthways; one end is then turned in for about half a foot, and the opposite end brought up and laid over it; thus one end is one fold thicker than the other, and the thickest end is placed foremost; in this way it is placed on the back, and after the saddle has been adjusted and the *blanket raised in the arches*, the girthing begins. In order to keep the blanket in its place, one of the folds at the anterior extremity on each side is turned backwards and placed under the front girth strap; *the blanket will now never shift*. There was but one sore back, and that very slight.

The head collars were lighter than ours, and buckled on the poll. The bits were smaller and shorter; the birdoon fastened by a chain and T-piece.

The Hussar saddle is on the Hungarian Bock principle: that is, wooden or iron arches resting on light square-cut sideboards; cantle high. Over this is placed a leather seat padded with straw, kept in its place by passing over the cantle and strapped in front. The whole looks clumsy, but they say it is very comfortable. The bare sideboards are placed on a good blanket folded as before. We noticed that some of the saddles had thin straw pannels tied together with string; their utility appears doubtful. No cruppers were used, and the breastplate was fastened to the saddle by a strap which went across the seat. There were no sore backs in the regiment. The artillery use the Hungarian Bock saddle as before described. We again noticed how well the girth was carried (string girths used by this arm); the traces were of rope and about half the thickness of ours. All the harness appeared light; very much lighter than we use. The saddlery of this army appeared very old and very dirty, no attempt at polish; leather work hard, cracked, and apparently perished; in many places the stitching had given way, but withal the turnout looked serviceable.

Belgian Army.—Cavalry saddle peculiar. There is a double sideboard, and between the two a ball and socket joint anteriorly and posteriorly, so that the sideboard will adjust itself to the angle of the back on which it rests. The whole is placed on a blanket folded, and kept in its place by the same means as the Germans employ.

The artillery saddle is the same principle as the cavalry, but has a split seat, which is considered a disadvantage. The side boards are often placed on the bare back for light duties, the girth straps are attached to both front and rear arches, and the rear one goes across the saddle to its fellow on the opposite side. They girth downwards, a decided advantage for a short driver. The stirrup irons are blackened; no attempt at iron or leather polish. They carry a spare curb chain on the top of the head collar. The draught is the same as the French and German, viz., pole, but we observed a most simple and ingenious method of applying in pole draught the advantages of the breeching used in shaft draught. A breeching is put on in the ordinary way, a strap goes round the front of the horse, passing through loops in the collar, and attached to the breeching on both sides. The pole chains are not attached to the collar, but to this strap, so that in pulling up there is no strain on the collar and back of neck, but only on the breeching. The arrangement is admirable, and it should be used in every case of pole draught; the advantage to the animal is enormous, and we are pleased to hear that on our recommendation it has already been tried.

Saddle racks are placed in the stable of the French and Germans, but with the Belgians the saddles are kept in proper saddle rooms. The French use a bracket which can be let down when required. The Germans hang their saddles up by a strap to a peg, and to prevent the edge of the arch getting injured against the post there is a straw mat for it to rest against.

We would respectfully draw especial attention to our remarks on saddlery. We observe, first, that the blanket is universally used and appreciated; it does not get displaced, and is easily kept in position. The blanket is always a good one; the girths are string, and attached invariably to each end of the saddle, thus ensuring their being kept in their place, and preventing the latter rocking. The admirable contrivance for applying of breeching in pole-draught is especially valuable. Of all we saw, nothing in our opinion taught us so much as this inquiry into the saddle, and we had ocular proof of the value of the system in the German army in the practically entire absence of sore backs after very heavy work.

We regret we cannot state the weights carried by the different armies. They appear to be much the same as our own, excepting in the German artillery, where less is carried.

Forage.—We noticed that in all the armies straw was an essential article of diet, being put in the rack with hay. The hay appeared inferior, and the trusses were in reality bundles; the oats were as good as our contract corn. In the German Cuirassier regiment beans were given after being steeped in water for some time; the beans were purchased from the manure sold. The amount of forage given is much the same as ours, excepting the hay, which is less, and made up by straw. In the German army the stable refuse belongs to the regiment, and is sold, extra rations being purchased for the horses. In the French and Belgian armies the manure is the property of the government.

Forges.—In all the armies hot shoeing is used. The shoes and shoeing to our ideas are old-fashioned; it takes two men to shoe a horse, and the same care is not observed as with us; both knife and rasp are freely used, and the feet much mutilated.

There appears to be no definite method of frost shoeing. The French are trying frost nails, one with a large square head, and one with a sharp head

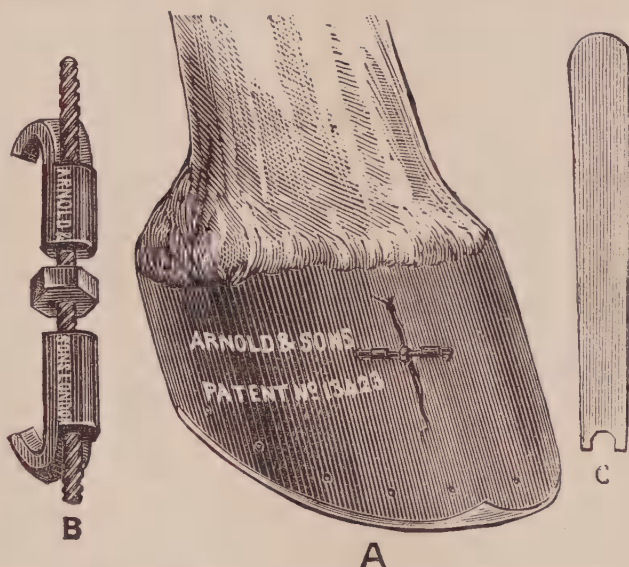
We were told they preferred a flat to a sharp head, as the flat head wore with sharp edges, whereas the sharp heads soon blunt. The Germans use the square stud, and have the same complaint as we have, viz., cannot depend on their keeping in. The Belgians use a frost nail. Both French and Belgians use indiarubber frog pads, and speak highly of them for town work; they last two or three months. In Brussels we were shown a frog pad made of leather, from which much was expected.

Picketing.—The Germans use a picket line secured by posts about two and a half feet above the ground. To this the head ropes are fastened. The object of keeping it so high above the ground is to prevent horses from getting over it. They use no heel ropes, as with a high line they are not required. The Belgians use nothing but an iron picketing ring, and to this they tie twelve or more horses. They say the horses can rest, and are very comfortable. The saving to a regiment in weight carried by adopting this ring is enormous.

In conclusion, we would say that matters of special veterinary interest which we saw at the French and Belgian veterinary schools, and Pasteur's Institute at Paris, will form the subject of a professional report.

IMPROVED SCREW CLAMP FOR SANDCRACK IN HORSES.

SUGGESTED BY PROFESSOR D. MCGILL, F.R.C.V.S.



THE object of this invention, which is patented, is to arrange on a spindle that is screw-threaded at one end, with a right-hand thread B, and at the other end with a left-hand thread, two clips or clamps free to travel on the thread, there being a nut between the two which can be turned by a spanner, C.

The clamps are placed on the hoof, one on each side of the Sandcrack, the hoof being prepared to receive the instrument by filing a groove or notch for the clamps to fit into; and by turning the nut on the screw the clamps are brought towards each other, and so draw the sides of the crack together, the latter being thus prevented from extending. They have been used in many very severe cases with perfect success. The clamps prevent all movement, and in cases in which the crack had been opened up, and into which was inserted about an inch in width of hard wood, enabled to get perfect solidity. Horses are now working without showing lameness; for a sandcrack, when taken in time, the clamp stops it at once effectually.

It is manufactured and patented by Messrs. Arnold and Sons, of West Smithfield, London.

THE FITZWYGRAM PRIZES.

WE are requested by Lieut.-Gen. Sir F. Fitzwygram, Bart., to say that he intends to give his Veterinary prizes as usual; but in consequence of the changes lately made in the examinations of the R.C.V.S., he is unable at present to fix the date of the competition.

SOCIÉTÉ NATIONALE D'AGRICULTURE OF FRANCE.

At the meeting of this Society, held in Paris on February 15th, Dr. George Fleming, C.B., Principal Veterinarian to the Forces, was unanimously elected a Foreign Member. The *Times* of February 21st, in making this announcement, mentions that this Society is very similar to the Academy of Sciences, its Members being restricted to fifty-two in number, and its Associates to thirty. Membership in it is the highest honour in French agriculture. It is added that Dr. Fleming is elected for distinguished service in connection with live stock. In the announcement made by the Secretary, it is stated that the Society, in making the election, was desirous of recognising in the fullest manner the value of the new member's fine works (*beaux travaux*) on the veterinary art.

We are sure the members of the veterinary profession in this country will accept this distinction as a very high compliment to themselves, as a body, from, perhaps, the most select and influential agricultural society in the world.

Reviews.

A TREATISE ON THE DISEASES OF THE DOG; BEING A MANUAL OF CANINE PATHOLOGY. By J. H. STEEL, M.R.C.V.S., Army Veterinary Department. (London: Longmans, Green & Co. 1888.)

Mr. Steel has added another to the list of his useful books, by publishing this manual on dog diseases, which, we presume, is intended for the use of veterinary surgeons more especially—indeed, it is so stated in the preface. It is the best work on the subject yet produced, at least in the English language, and considering the disadvantages under which the author laboured—for not only was he out of this country, but his duties as Professor of Veterinary Science and Superintendent of the Bombay Veterinary School, must have allowed him little time for book-writing—it is very complete, and the scientific references are brought well up to date. And, as Mr. Steel observes, the work has a distinct character of its own, in the incorporation of such facts of anatomy, physiology, pathology, and the other accessory sciences as bear on the actual details of diseases, and which, being peculiar to the dog as compared with other animals, are liable to slip the memory, or escape special notice in the course of study of disease in general. Those members who are engaged in canine practice, and even those who are only incidentally consulted on dog management and ailment, will, we doubt not, gladly accept this valuable contribution to veterinary literature as a guide and book of reference.

MANUEL DE L'INSPECTEUR DES VIANDES. Par L. VILLAIN ET V BASCON. (Paris: G. Carré. 1888.)

The immense importance to the public of a proper and thorough

system of meat inspection has long been recognised by the principal Continental governments, and arrangements for providing flesh, not only of quality fit for food, but free from dangerous properties, are more or less perfect. These arrangements consist chiefly of public abbatoirs and government or municipal inspectors, who are members of the veterinary profession. The abbatoirs of Paris have generally been classed among the most complete and commodious, and the system of inspection as very trustworthy. The Parisians are therefore guaranteed against fraud and danger, through the admirable provision made on their behalf, while the experience acquired by the professional experts is very great, and has often been placed before their colleagues. In this respect, however, the Parisian veterinary inspectors have only done what many others in France, Germany, Italy, Belgium, and elsewhere on the Continent, have praiseworthily accomplished.

The work now before us is the production of M. Villain, chief of the slaughter-house inspection of Paris, and M. Bascon, controller of the same service, assisted by MM. Lafourcade Moulé and Méraux, inspectors also of this service, all being members of the veterinary profession. It is the complement to another work having the same title, and which appeared as a report presented to the Paris Préfet of Police in 1885, and is in the form of an atlas of well-executed plates, nearly all coloured, and a descriptive portion treating of the different conditions which should render the condemnation of meat necessary, the importance of examining the animals before slaughter, the determination of the age of calves, abbatoirs, flesh improper for consumption; the "blowing" of veal by butchers, the parasites of flesh, and legislation with regard to butcheries and the sale of meat.

In all these points the authors are brief, but explicit, and their observations, based on intelligent experience, are of great value; while the plates, which have been prepared under their immediate direction, appeal at once to the eye, and must prove of much value to those who are concerned in meat inspection, whether it be that of the bovine, ovine, and porcine species only, or that also of the horse, mule, and ass.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

SPECIAL MEETING OF COUNCIL HELD JANUARY 18th, 1888.

SIR HENRY SIMPSON, President, in the chair.

Present.—Sir F. Fitzwygram, Bart., Dr. Fleming, C.B.; Professors Axe, Brown, C.B., Duguid, McCall, Pritchard, Walley, Williams; Messrs. Barford, Briggs, Campbell, Carter, Cartledge, J. Roalfe Cox, Dray, Greaves, Harpley, Mulvey, Perrins, Santy, Simcocks, J. F. Simpson, Taylor, Whittle, Wm. Woods, Wragg, Mr. George Thatcher (Solicitor to the College) and the Secretary.

The minutes of the last meeting were read and confirmed.

The PRESIDENT said that the New Rules of Examination had been suspended for three calendar months in accordance with the Charter, and such as

were passed to-day would have to be confirmed within fourteen days by a special meeting.

On the motion of Mr. TAYLOR, seconded by Mr. GREAVES, the Regulations for the Examination of Veterinary Students in General Education were agreed to.

Regulations for the Professional Education.

On the motion of Mr. CARTLEDGE, seconded by Professor WILLIAMS, Regulation No. 1 was agreed to.

On the motion of Mr. J. SIMPSON, seconded by Mr. CARTER, Regulation No. 2 was agreed to.

On the motion of Mr. WOODS, seconded by Mr. PERRINS, Regulation No. 3 was agreed to.

Mr. BRIGGS proposed, and Professor McCALL seconded, "That Rule No. 4 be passed," adding the words "Equine and comparative" after "Syndes-mology."

Mr. WRAGG said that many students of the London School had entered on the understanding that "Anatomy" would be in the second examination.

The PRESIDENT said all students entered subject to the Rules and Regulations laid down by the College, and the new Rules would be binding on them.

Professor PRITCHARD said they entered under the Rules of the Royal College of Veterinary Surgeons, and they demanded to be examined under them.

The PRESIDENT said the Charter authorised the Council from time to time to alter "the same Orders, Rules, and Bye-laws," and "to make new Orders, Rules, and Bye-laws in their stead, as the Council shall think most proper and expedient, so as the same be not repugnant to these presents or to the laws of this Our realm." That meant that the Council was the legislative body, and that the students entered on the condition that if the Council chose to alter the Rules they must submit to them.

Mr. WRAGG said that was not according to precedent.

Mr. THATCHER (Solicitor) said he did not think there could be much doubt about the point. No Rule could be retrospective, but the students entered with the knowledge of the Charter, and they must be bound by what had been done in the past. If the Council passed the new Rules his opinion was that the students would have to submit to them.

Professor BROWN thought that when the new Regulations were framed it was distinctly understood that they would not apply to the students who entered under the old Regulations.

Professor WILLIAMS said he had quite understood that the new Rules would come into force, and he had prepared his men accordingly.

Professor McCALL said that he also had acted on the supposition that the new Rule would be enforced. If there was any hardship it could only apply to the Camden Town School, and it would be only right to make some arrangement of a temporary character for that College.

Professor WALLEY said that in his College it had been distinctly stated in the prospectus that in all probability the new Regulations would come into force for students joining in October last; at the same time he thought that those men who were in the College prior to any movement of this kind being taken should have the privilege of coming up under the Rule. He did not know what might be the practice in other colleges, but in his the students were bound to attend Osteology in the first year.

The PRESIDENT suggested that there might be an instruction to the Examiners that students entered under the old Regulations should be entitled to be examined according to them.

Professor DUGUID thought the new Rule should not come into operation for twelve months.

Professor PRITCHARD said that more than five years ago it was tried to do away with the Christmas examination, but the attempt had not yet succeeded, and he questioned whether that examination would be abolished for a year or two yet. It was now proposed to make another deviation, and he thought it would take more than five years to carry it out. It could not therefore be described as merely a temporary matter.

The PRESIDENT said the Council had the law on their side, and could do as they pleased.

The resolution was carried.

On the motion of Mr. TAYLOR, seconded by Mr. CARTER, Regulation No. 5 was agreed to.

On the motion of Mr. CARTLEDGE, seconded by Professor WALLEY, Regulation No. 6 was agreed to.

On Regulation No. 7, Professor MCCALL suggested that the words "engage in practice" should be omitted, and the words "become a pupil to a member of the College" substituted. He also suggested that the words "in point of time" be inserted after "the following examination," and that after the words "in every such case the student shall," the following words should be inserted:—"return to the College and be in regular attendance on the classes for a period of not less than one month, and he shall produce a certificate signed by the member of the Royal College of Veterinary Surgeons with whom he has served." It had been objected that a student, under the proposed Rules, might remain for an indefinite number of years as an assistant to a professional gentleman, but by the introduction of the words "in point of time" every student would be bound to come back and pass his examination. In conclusion he moved that the Regulation, with the additions he suggested, be passed.

Professor WILLIAMS seconded the motion.

Mr. J. F. SIMPSON was convinced that if this new rule were passed it would inflict an injustice upon those to whom the Council had already granted the diploma of the College; it would make it easier for men to enter the profession. And although he was in no way advocating monopoly, he asked for fairness; and appealed to the Council, in the name of the hundreds and hundreds of struggling practitioners who held the diploma, to reject the rule, and not allow them to be overwhelmed by making rules which enabled men to enter the profession more easily than those who had already passed. He would therefore propose an amendment that all the words after "disjoined" be omitted. He gave the professors at the schools credit for being excellent business men, and men anxious for the interests of the schools; but it was the duty of the Council to legislate for the interest of the whole profession. When the Veterinary Surgeons Act was introduced a pupilage clause was proposed, and the greatest amount of opposition came from those who represented the schools. Why? Because they knew that if the clause were passed the schools would suffer for the first two years. These gentlemen then said the schools could impart to the student all the practical knowledge required to satisfy the examiners. Time has shown that this cannot be done, however good and practical the teacher may be; and the result is that the schools were now—he would not say *blocked* with rejected men—but it was well known that there were a large number of them; and it was for the benefit of these students that the Council were asked to make it easier for a man to enter the veterinary profession. By the proposed new rule he considered it quite possible for men to return to their practical examination again and again, until by mere chance they managed to squeeze through.

Mr. TAYLOR seconded the amendment.

Mr. ROALFE COX suggested, as an addition to Rule 7, or as a new rule: "If a candidate who has been rejected at the practical examination do not present himself for re-examination within twelve months he shall be precluded from re-examination and from admission to the Royal College of Veterinary Surgeons."

Professor WILLIAMS considered that Mr. Simpson had put a wrong construction on what was said by the professors at the time the pupilage clause was discussed. All that they objected to was making that clause compulsory. The Council could make the examination as hard as it pleased. He heartily supported the rule as altered by Professor McCall.

Professor WALLEY agreed with all that had fallen from Professor McCall and Professor Williams. Professor McCall's notice of alteration met the views of all parties, and if it were adopted many heartburnings would be done away with. Personally he did not wish for any unpleasantness to occur between his school and the Council. The action of the professors was a purely disinterested one, for they and not the practitioners would be losers by it. They did not want rejected students kept at the schools year after year. If they passed at the Oral and were rejected at the Practical, by all means let them go elsewhere, and then the practitioners of the country would be benefited. If they were not allowed to squeeze through they would simply go to swell the great body of quacks, for they could not be prevented practising.

Mr. J. SIMPSON said if the rejected men were sent back to the College they would still be unable to obtain any more practical knowledge than they acquired during the first three terms, and in the end he thought the professors would see that it was advisable that those students should obtain practical knowledge before going to the colleges.

Dr. FLEMING thought the examinations should be made, if altered at all, more strict, but what was now proposed would make them easier. By the instalment plan a dull man might get through who would otherwise fail.

Mr. GREAVES was quite certain that the profession generally would approve of the pupilage clause.

The amendment was put and negatived, and the original resolution that the rule be passed with the proposed alterations was then put.

Professor PRITCHARD objected to the first part of the rule, which stated that the "Final Examining Board shall consist of two sections, the first to conduct the Oral, and the second the Practical." Having had some little experience, both in teaching and examining, he was perfectly convinced that that plan would not work. In the majority of instances the two gentlemen who examined the pupils on the Practical kept their minds open until they had an opportunity of dealing with them over the table. He for one, and he believed he was speaking the sentiments of his colleagues, had done so over and over again. He would not undertake the responsibility of deciding whether a man was equal to passing simply from the Practical examination. A candidate was naturally flustered. The questions put to him might be very simple, and, as far as his experience went, the more simple they were the more frequently he was thrown off his guard. A quarter of an hour or twenty minutes was not sufficient time to enable the Examiner to come to a conclusion whether or not the man was properly prepared. Knowing that he was coming up for examination he was all of a sudden asked to examine a horse as to soundness, and became flustered, and an Examiner ought to see him again under different circumstances. He did not think that any Examiner had a right, in duty to himself and to the candidate, to put himself in the position of saying that a quarter of an hour or twenty minutes' examination was sufficient. If a man was marked "bad" at the Practical, what were the Oral Examiners to do with him? or if the Oral Examination was first, and he got "bad," what were the Practical Examiners to do with him? Those who dealt with him in one

examination should deal with him in the other, and he (Professor Pritchard) would not undertake the responsibility of saying whether a man was fit simply from one examination. He would therefore move as an amendment, "That the Final Examining Board shall consist of one section to conduct both the Oral and Practical Examinations."

Mr. WRAGG seconded the amendment.

The amendment was lost—13 voting for it, and 10 against it.

The Rule, with the alterations proposed by Professor McCall, was then carried.

Mr. ROALFE COX submitted to the Council whether it was not desirable that a certain date should be fixed within which the rejected student should be at liberty to come up for re-examination. He would therefore propose that "if a candidate who has been rejected for the Practical Examination do not present himself for re-examination within"—such time as the Council might determine—"he be precluded from further re-examination, and from admission to the Royal College of Veterinary Surgeons."

The PRESIDENT said he thought that would be a new rule, notice of which should be suspended for three months.

Sir FREDERICK FITZWYGRAM said he thought it might be added to Rule 16 or Rule 17.

On the motion of Professor WALLEY, seconded by Mr. MULVEY, Regulation No. 8 was agreed to.

On the motion of Mr. MULVEY, seconded by Mr. TAYLOR, Regulation No. 9 was agreed to.

On the motion of Professor WALLEY, seconded by Mr. CARTER, Regulation No. 10 was agreed to.

On the motion of Mr. MULVEY, seconded by Mr. CARTER, Regulation No. 11 was agreed to.

On the motion of Mr. WRAGG, seconded by Professor McCALL, Regulation No. 12 was agreed to.

On the motion of Mr. DRAY, seconded by Professor WILLIAMS, Regulation No. 13 was agreed to.

On the motion of Mr. CARTER, seconded by Mr. MULVEY, Regulation No. 14 was agreed to.

On the motion of Mr. CARTER, seconded by Mr. WOODS, Regulation No. 15 was agreed to.

On Rule 16,

Mr. ROALFE COX said it required alteration, because it clashed with Rule 7. If a student did not return to his school he could not give "satisfactory proof" of doing so.

Professor McCALL proposed that the Rule should read: "A student who is rejected at the first, second, or Oral division of the Third examination, shall not be eligible," etc.

Professor WALLEY seconded the motion, which was agreed to.

Mr. TAYLOR moved that Rule 17 be passed.

Professor WILLIAMS seconded the motion.

Mr. ROALFE COX proposed to add the words: "And if a candidate who has been rejected at the Practical Examination do not present himself for re-examination within twelve months, except in case of illness or other cause satisfactorily certified," he will be precluded from further re-examination, and from admission to the Royal College of Veterinary Surgeons.

Professor McCALL seconded the amendment, which was carried—15 voting for it, and none against it.

On being put as a resolution, it was carried *nem. con.*

On the motion of Professor WALLEY, seconded by Mr. BARFORD, Regulation No. 18 was agreed to.

On the motion of Mr. PERRINS, seconded by Mr. CARTLEDGE, Regulation No. 19 was agreed to.

On the motion of Mr. CARTLEDGE, seconded by Mr. MULVEY, Regulation No. 20 was agreed to.

On the motion of Professor MCCALL, seconded by Mr WOODS, Regulation No 21 was agreed to.

On the motion of Mr. MULVEY, seconded by Mr. GREAVES, Regulation No. 22 was agreed to.

The PRESIDENT said the next business was to consider a notice of motion by Mr. Greaves, "That the Court of Examiners be composed of members of the veterinary profession only."

Mr. GREAVES said that for many years he had carefully studied this subject. He was satisfied that his proposal would in various ways benefit the profession. It would confer independence and dignity, and be a strong incentive for aspiring members to attain to a higher degree of excellence. The profession was ninety-seven years old, and they should now have courage to put off their swaddling clothes, and try to walk by themselves. One of the very highest authorities in the profession seventeen years ago strongly advocated the same views. Professor Spooner then said: "He would be the very last man to advocate the removal from the Court of Examiners of any of those gentlemen who had so ably supported them at the Physiological, Chemistry, and Materia Medica tables; but at the same time he would say that so long as that pillar of support remained bound to the tree, so long would it require its aid. Remove it, and the winds might blow it, and it might yield to some extent, but its roots would become strengthened by virtue of its self-supporting power, and thus you could throw off the extraneous aid. No more, then, would he admit members foreign to their body after this period to the Court of Examiners." The Bye-laws authorised the Council "to appoint a sufficient number, not exceeding twenty-two persons, to constitute a Court of Examiners," and that of those, "not less than six shall be members of the College." That did not prevent their appointing as many as they liked of their profession, not exceeding twenty-two. The ninth Clause of the Supplemental Charter for 1876 laid it down, "That at the end of ten years from the date thereof no member of the said College save and except the present members of the said Council, who shall not also be a Fellow of the said College, shall be eligible to be a member of the Council or to serve as a member of the Board of Examiners." It would be a sad and grave reflection on the teaching schools to contend that there were no members of the profession fully competent to fill the various offices on the Board. All that was wanted to continue the supply of eminent specialists from the ranks of the profession, was an encouragement to students to keep up and cultivate their knowledge, and that would be afforded by the opportunity of becoming Examiners. He therefore moved, "That the Court of Examiners be composed of members of the veterinary profession only."

The motion was not seconded.

Mr. GREAVES withdrew the other notice of motion standing in his name, referring to the appointment of a Court of Appeal, from the decision of the Examiners, it being ruled that it was contrary to the provisions of the Charters.

Mr. SIMCOCKS withdrew his notice of motion to add a written Examination to the *Vivâ Voce* and Practical at the Final Examination.

This concluded the business of the special meeting, and the Council at once proceeded to the business of the quarterly meeting.

REPORT OF PROCEEDINGS AT THE ORDINARY QUARTERLY MEETING.

Sir Henry Simpson, President, in the chair.

The SECRETARY read the notice convening the meeting.

The minutes of the last meeting were read and confirmed.

The SECRETARY read the Report of the Finance Committee, who recommended that £300 should be invested in the Three per Cent. Consols.

On the motion of Mr. WRAGG, seconded by Mr. TAYLOR, the report was adopted.

The SECRETARY announced the following presentations to the Library :

"Veterinary Posology," by G. A. Banham.

"Equine Diseases of India ;" "Veterinary Surgical Pathology and Practical Medicine," by R. W. Burke, A.V.D.

"Diseases of the Dog," by J. H. Steel.

"Calendar of the Royal College of Surgeons."

On the motion of Mr. WRAGG, seconded by Mr. TAYLOR, a vote of thanks was passed to the donors.

Two diplomas of holders of the Highland and Agricultural Society's certificate were signed.

A letter was read from Dr. Huidekoper thanking the Council for electing him an honorary member.

The SECRETARY read the Report of the Registration Committee.

The SECRETARY read the Report from the Court of Examiners for England and Scotland.

On the motion of Mr. TAYLOR, seconded by Professor WALLEY, Mr. Woodger and Mr. Broad were re-elected auditors.

Appointment of Examiners.

Sir FREDERICK FITZWYGRAM moved, "That in the appointment of the Examining Board one Examiner should be appointed from England, and one from Scotland or Ireland in each table, as far as possible."

The motion was carried by 10 to 8.

For the First Examination.

Mr. Campbell, Mr. Jas. Lambert, and Mr. Simcocks were nominated as Examiners in Elementary Anatomy.

The Ballot having been taken, the voting was : Mr. Simcocks 23, Mr. Campbell 16, Mr. Lambert 11.

The PRESIDENT declared Messrs. Simcocks and Campbell elected.

Messrs. Heaton, Finlay Dun, Stevens and Woods, jun., were nominated as Examiners in Chemistry.

The result of the ballot was :—Professor Heaton, 21, Mr. Finlay Dun 18, Mr. Stevens 6, Mr. Woods 5.

The PRESIDENT declared Mr. Heaton and Mr. Dun elected.

Mr. Walters and Professor McQueen were elected Examiners in Botany, etc.

For the Second Examination.

Dr. Fleming and Professor Vaughan were elected Examiners in Anatomy of the Horse, etc.

Professor McKendrick, Dr. Yeo, and Mr. W. A. Taylor were nominated as Examiners in Physiology and Histology.

The result of the ballot was :—Professor McKendrick 20, Dr Yeo 18, Mr. W. A. Taylor 14.

The PRESIDENT declared Professor McKendrick and Dr. Yeo elected.

For the Final Examination.

Mr. Banham, Dr. Hamilton (Queen's College), Mr. Lingard (Brown Institute), and Mr. Woods, jun., were nominated as Examiners in Morbid Anatomy, etc.

The result of the ballot was :—Mr. Banham 19, Dr. Hamilton 13, Mr. Lingard 13, Mr. Woods, jun., 7.

The PRESIDENT declared Mr. Banham elected.

A second ballot was taken between Dr. Hamilton and Mr. Lingard, the result being :—Dr. Hamilton 17, Mr. Lingard 9.

The PRESIDENT declared Dr. Hamilton elected.

Professor Pritchard and Mr. J. Roalfe Cox were elected Examiners in Diseases of the Horse, etc.

Professor Duguid, Mr. John Freeman (of Dublin), and Mr. Archibald Robinson were nominated as Examiners in Diseases of other Domesticated Animals, etc.

The result of the ballot was :—Professor Duguid 20, Mr. Freeman 16, Mr. Archibald Robinson 8.

The PRESIDENT declared Professor Duguid and Mr. Freeman elected.

Sir Henry Simpson and Mr. Cartledge were elected Examiners in Practical Examination of Horses, etc.

Mr. Olver, Mr. Woods, sen. (of Wigan), Mr. Archibald Robinson, and Mr. Wilson (Berkhampstead), were nominated Examiners in Practical Examination of other Domesticated Animals.

The result of the ballot was :—Mr. Olver 21, Mr. Woods 18, Mr. Archibald Robinson 7, Mr. Wilson 4.

The PRESIDENT declared Mr. Olver and Mr. Woods elected.

Professor WILLIAMS moved, "That the Board just elected be appointed for a period of five years in accordance with the Bye-laws; and that the salaries and allowances paid to the Examiners in the past be paid to them for a period of twelve months from the date of commencing their duties."

Mr. BARFORD seconded the motion, which was carried.

Obituary.

The SECRETARY read the Obituary.

The PRESIDENT said they must all regret that so many members had been called away, but there was one name which must present itself to all as indicating a terrible loss to the profession. He alluded to Professor Robertson, late Principal of the Royal Veterinary College, London, and a member of this Council. Those who had known Professor Robertson were aware what an estimable man he was in every sense of the term, and how great his loss would be to the profession and to his students. He had begun to put his mark upon the Camden Town institution, and it would be very difficult indeed to fill his place. As an Examiner, before he came to London, he was a thoroughly practical man, who knew what students ought to be, and examined conscientiously and carefully. At the meetings of the Council he gave a fair consideration to every question without passion or prejudice. He (the President) had felt that he would only be doing what the Council wished in at once writing a letter of condolence to the widow, expressing the hope that he might be permitted to attend the funeral as representing the profession. He also directed a beautiful wreath to be forwarded by the Queen's florist, to be placed on the coffin, from the President and Council, in affectionate remembrance. He received an invitation from Mrs. Robertson to attend the funeral, and did so, as did also many other members of the profession. If there had been longer notice he was sure that a still greater number would have attended. He would now move that a vote of condolence be sent from the Council to Mrs. Robertson.

Mr. CARTLEDGE seconded the motion. He had had, he said, the pleasure of Professor Robertson's acquaintance and friendship for very many years, and he did not think he had ever met a more estimable man.

Professor WALLEY supported the motion as representing the College at which Professor Robertson graduated. Had it not been for that gentleman's self-sacrificing generosity he (Professor Walley) would not be holding his present position. On two occasions Professor Robertson was asked to become the Principal of the Old College, Edinburgh. The first time he distinctly refused; the second time he so far accepted as to sit down and write his introductory address, but when he found that he (Professor Walley) was a candidate for the office he at once withdrew.

The resolution was carried unanimously.

On the motion of Mr. J. SIMPSON, seconded by Professor MCCALL, the President, Treasurer, Dr. Fleming, Mr. J. Roalfe Cox, and the Secretary, were appointed as a committee to prepare the annual report for presentation at the next quarterly meeting of the Council.

Mr. THATCHER (Solicitor) gave his opinion that according to Bye-law 58 the books were not open to inspection by any one beyond the President and Secretary, except by order of the Council.

A letter from Mr. Parker, of Patrick, addressed to Professor McCall, was, on the motion of Mr. TAYLOR, seconded by Mr. WRAGG, referred to the Registration Committee.

Professor PRITCHARD asked when the new Rules as altered would appear in print?

The PRESIDENT thought it desirable to have them printed in the new Register in the usual way.

Professor AXE asked if the examinations in April would take place under the new arrangement as to Examiners?

The PRESIDENT said they would.

A vote of thanks to the President terminated the proceedings.

SPECIAL MEETING OF COUNCIL, HELD JANUARY 31st, 1888.

SIR HENRY SIMPSON, J.P., President, in the chair.

Present:—Professors Axe, G. T. Brown, C.B., W. Duguid, W. Pritchard; Dr. Geo. Fleming, C.B.; Messrs. J. Roalfe Cox, M. J. Harpley, W. F. Mulvey, Jas. F. Simpson, J.P., F. W. Wragg, and the Secretary.

The SECRETARY read the notice convening the meeting.

On the motion of Dr. FLEMING, seconded by Professor BROWN, the minutes of the previous meeting were read and confirmed.

The SECRETARY stated that he had received letters from Messrs. Greaves, Perrins, and Taylor, regretting their inability to attend the meeting.

The PRESIDENT said that the meeting had been called for the purpose of confirming the Rules for Examination of Students which had been passed at the last special meeting. He ventured to hope that the proceedings would be merely formal as the matter had been already fully discussed. Should any further alterations be made they would have to begin *de novo*, and the work of the last six months would be entirely undone. The discussion at the previous meetings had been full and ample, and the last one (that on the 18th January) had certainly taken place when a larger number of members of the Council were present than he had before seen.

Mr. J. ROALFE COX asked whether the Rules, as amended, had been reprinted.

The PRESIDENT said that they had not.

Mr. J. ROALFE COX thought it advisable that the Rules should be read.

The SECRETARY read the Rules as altered on the previous occasion.

Professor PRITCHARD said he was inclined to think that one or two subjects were left out that had been in the old curriculum. He should like to ask whether *Materia Medica* was provided for.

The PRESIDENT said that it was.

Professor PRITCHARD remarked that it was made a small and side subject instead of being a principal one.

Mr. J. ROALFE COX thought that if *Materia Medica* were otherwise provided, for it would be an advantage.

Professor BROWN said that whether the alteration in the position of *Materia Medica* was right or wrong, about which he had no very strong opinion, it had been put in its present position after a great deal of discussion and he therefore presumed there was not the slightest chance of any change unless, as the President had remarked, they went over the whole ground again. The Council had already decided that the proper place for the subject was in the third Examination instead of the first. In order to bring the matter to an issue, he would move that the Rules as passed at the last meeting be confirmed.

Mr. W. F. MULVEY seconded the motion.

The motion was put and agreed to.

Professor PRITCHARD said he should like it to be recorded how many members of the Council voted for the resolution and how many did not vote.

The PRESIDENT said that no one voted against it.

Mr. M. J. HARPLEY thought the motion had been carried unanimously.

Mr. JAS. F. SIMPSON asked whether there was any objection in carrying out Professor Pritchard's suggestion.

The PRESIDENT said there was no objection in doing so, but the motion had certainly been carried without a dissentient.

The meeting then terminated.

CENTRAL VETERINARY MEDICAL SOCIETY.

AN ordinary general meeting of the above Society was held at the First Avenue Hotel, Holborn, on January 5th, 1888, the President (Mr. Sheather) in the chair. The following Fellows were present:—Messrs. A. Broad, Caton, Cheeseman, Elworthy, Gibbings, Harrison, Hunting, Ingersoll, Moore, Mulvey, Oatway, Raymond, Rickards, Roots, Rowe, Samson, Singleton, Willis, Woodger, Wragg, and Villar; and Messrs Farrow, Rogerson, Somers, and Wright were present as visitors.

Mr. W. H. Farrow, M.R.C.V.S., of Worship Street, London, and Mr. Arthur Rogerson, M.R.C.V.S., of Camden Town, were unanimously elected Fellows of the Society.

In the unavoidable absence of Professor Pritchard, who was to have delivered a lecture, the President introduced for the consideration of the Society the subject of "Splint Lameness." He described the *post-mortem* appearances of both "recent" and "old-standing" splint; gave a new theory to account for the more frequent occurrence of splints upon the inner side of the limb than the outer side; enumerated the chief causes of the disease, and described his methods of treatment for its cure.

An animated discussion followed, in which Messrs. Mulvey, Samson, Wragg, and Villar took part.

At the February meeting of the Society, held on 2nd inst., the President again occupied the chair.

The Fellows present were Professor Pritchard, Messrs. Alfred Broad, Caton, Edgar, Elworthy, Farrow, Herron, Hunting, Hurndall, Lowe, Moore, Mulvey, Oatway, Rogerson, Roots, Slocock, Walker, Willis, Wragg, and Villar; Messrs. Morgan-Evans, Arthur James, Hunting, and Rogers attended as visitors.

Letters were read from Professor AXE and Mr. Harrison, of Hertford, regretting their inability to attend the meeting.

The consideration of a letter received from the Honorary Secretary of the Lincolnshire Veterinary Medical Association was deferred until the March meeting.

On the motion of Professor PRITCHARD, seconded by Mr. EDGAR, and carried unanimously, the Secretary was instructed to write a letter of condolence on behalf of the Society to the widow of the late Professor Robertson.

It was proposed by the PRESIDENT, seconded by Mr. ALFRED BROAD, and carried unanimously, "That it be submitted to His Royal Highness the Duke of Cambridge, as President of the Royal Veterinary College, and the Governors, that the Fellows of the Central Veterinary Medical Society, having regard to the serious importance to the veterinary profession attending the appointment of Principal to the Royal Veterinary College, respectfully request that the Governors of that institution, in making the appointment, will take into consideration the many excellent qualities, the lengthened experience, and the disinterested and genuine work exhibited by Professor AXE in the advancement of veterinary science."

A very interesting morbid specimen, consisting of the fractured metatarsal bones of a hunter, was sent by Mr. Willows, of Cirencester.

Professor PRITCHARD then delivered a very able lecture on "Stable Management."

The discussion was opened by Mr. WALKER, First Life Guards, who described the process of stable management in the army service.

Mr. EDGAR and Mr. HUNTING having spoken, the further consideration of the subject was deferred until the next meeting.

Professor PRITCHARD gave notice of his intention to bring forward a motion of importance at the March meeting.

SIDNEY VILLAR, *Hon. Sec.*

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of the above Association was held at the Blackfriars Hotel, Manchester, on December 10th, 1887.

Present: Messrs. Thomas Briggs, President; J. B. Wolstenholme, P. Taylor, W. A. Taylor, S. Locke, W. Dacre, Alex. Lawson, J. Lawson, and A. J. Jones, all of Manchester; A. H. Darwell, Northwich; W. Whittle, Worsley; J. E. Eltoft and R. H. McRaith, Lancaster; A. M. Michaelis, Stockport; W. Woods, jun., Wigan; F. Carter, Burnley; A. Munro, Altrincham; R. C. Edwards, Chester; J. Faulkner, Rochdale; J. Hart, Oldham; H. Taylor, student, G. Morgan, and the Secretary, Liverpool.

Apologies for non-attendance were read from Prof. Williams, Prof. Robertson, Prof. Walley, Messrs. Thos. Leather, W. W. Smart, E. Faulkner, J. Marshall, and Chas. Phillips, A.V.D.

The SECRETARY then read the circular convening the meeting.

The minutes of the previous meeting were then read and confirmed.

A letter was read from Mr. F. H. Ridler, tendering his resignation.

An interchange of views then took place between the members and the committee appointed by the Liverpool Association, regarding the amalgamation of the latter with the former association. The terms proposed were agreed upon, viz., that the members of the Liverpool Association be received into the Lancashire Association without the payment of entrance-fee, and that the Lancashire Association hold one meeting per annum in Liverpool.

The terms were proposed by Mr. PETER TAYLOR, seconded by Mr. S. LOCKE, and carried unanimously.

The TREASURER (Mr. W. Woods, jun.) then read his annual report, which in due course will be printed and circulated.

It was proposed by Mr. S. LOCKE, and seconded by Mr. W. WHITTLE, that a vote of thanks be accorded to the office-bearers for their services during the past year.—Carried unanimously.

The elections of office-bearers for the ensuing year then took place.

Proposed by Mr. THOS. BRIGGS, seconded by Mr. ALEX. LAWSON, that Mr. J. B. Wolstenholme be elected President.—Carried unanimously.

Proposed by Mr. ALEX. LAWSON, seconded by Mr. WHITTLE, that Mr. Geo. Morgan be elected a Vice-President.—Carried unanimously.

Proposed by Mr. T. HOPKINS, seconded by Mr. WHITTLE, that Mr. John Lawson be elected a Vice-President.—Carried unanimously.

Proposed by Mr. WHITTLE, seconded by Mr. ALEX. LAWSON, that Mr. Hopkins be elected Treasurer.—Carried unanimously.

Proposed by Mr. W. WOODS, seconded by Mr. JOHN LAWSON, that Mr. Arthur Leather be re-elected Secretary.—Carried unanimously.

Proposed by Mr. PETER TAYLOR, seconded by Mr. JOHN LAWSON, that a letter of condolence be sent to the wife and family of the late Joseph Leather.—Carried unanimously.

Ulcerative Endo-Carditis.

Dr. Dreschfeld in a lecture demonstrated a number of specimens illustrating observations which he made on this subject, and which gave highly important and interesting results.

A patient affected with mitral disease, the result of Rheumatic Fever, which she had three years before she came under notice, suffered for a period of five months simply from slight rise of temperature. Towards the end of that period she became hemiplegic, recovered slightly, and then had a second attack of Hemiplegia, and died.

At the necropsy, old Endo-Carditis was found affecting the mitral valve, and on this were implanted numerous vegetations of more recent origin. The valve was incompetent in consequence of this, but nowhere could there be seen any ulceration. Microscopic examination of a scraping from the vegetations showed the presence of numerous streptococci. By plate cultivations a streptococcus was separated, which on gelatine, agar-agar, and potatoes grew in a peculiar and characteristic way. Injections of this pure cultivation, diluted in beef-tea, into the jugular vein of a rabbit, without previous injury of the aortic valves, produced most extensive and marked vegetations on the mitral and aortic valves, in which the same streptococcus was found. The kidneys showed well-marked infarcts.

Injections of diluted pure cultivation of the streptococcus obtained from the affected valve of this rabbit into the jugular vein of another rabbit produced again vegetations of the mitral valve. The animal became suddenly hemiplegic on the right side, and the *post-mortem* examination showed, besides the vegetations on the valve, a hæmorrhage into the left ventricle of the brain. The blood and the vegetations again showed the characteristic streptococcus.

In the non-ulcerative Endo-Carditis, very few observers had so far succeeded in finding any micro-organisms; whilst in the ulcerative form, several micro-organisms (staphylococci, streptococci, pneumococci, and bacilli) had been found; and the injection of some of these had been followed by slight deposits on the aortic valves. But in all these cases (with the exception of those of Ribbert), a previous injury of the aortic valve was necessary.

The successful experiments with this new streptococcus stamped it as the pathogenic organism of Endo-Carditis.

The PRESIDENT warmly thanked Dr. Dreschfeld for his admirable lecture. He remarked that the cases of Endo-Carditis he had met with had been traumatic.

Mr. DACRE also thanked Dr. Dreschfeld for twice coming before them. He had opened a new field; perhaps they would now look into the matter more carefully than they had done. He gave his experience of Endo- and Peri-Carditis.

Mr. HOPKINS likewise joined in the thanks accorded to Dr. Dreschfeld. In an outbreak in Manchester he suggested that some of the cases were due to micro-organisms.

Mr. PETER TAYLOR also offered congratulatory remarks to Dr. Dreschfeld, and followed with his experience relating to the lecture, and what had been said by previous speakers.

Mr. WOLSTENHOLME spoke of the necessity of forming a combination with the sister profession regarding research in matters of this description.

Other members joined in the discussion. At the conclusion, a very hearty and cordial vote of thanks was accorded to Dr. Dreschfeld and carried unanimously, after which Dr. Dreschfeld replied.

The usual vote of thanks to the President terminated the meeting.

ANNUAL MEETING OF THE LINCOLNSHIRE VETERINARY MEDICAL ASSOCIATION.

THIS meeting took place at the Angel Hotel, Grantham, on January 26th. There were present: Messrs. C. Hartley (Lincoln), D. B. Frear (Uppingham), Vice-Presidents; Capt. B. H. Russell (Grantham), Treasurer; F. L. Gooch (Stamford), Hon. Sec.; W. H. Brooks, Fulneck; W. Cooke, Grantham; J. Mackinder, Peterborough; J. Smith, Huntingdon; F. W. Wragg, London; J. Robinson, Market Deeping; D. Banham, Cambridge.

Mr. J. MACKINDER proposed that Mr. Hartley, the Vice-President, should take the chair. This was seconded by the Hon. Sec. (Mr. Gooch), and agreed to.

Mr. HARTLEY, in taking the chair, thanked the members for the honour conferred upon him.

A letter was read from the President, explaining his absence on that occasion.

The CHAIRMAN said he was very sorry that the President was unable to be present, for he had done a great deal for the Society during the past year. Mr. Greaves took a great interest in the Association, and he hoped he would be spared for many years to come.

The minutes were taken as read.

The HON. SECRETARY read a number of letters of apology for non-attendance of members and others at the meeting.

The CHAIRMAN called upon the Treasurer to present his statement of accounts for the past year.

A general conversation here ensued as to the retaining of certain names on the roll of membership.

Captain RUSSELL proposed that the Secretary be empowered to write a letter to Mrs. Wyre, of Donnington, conveying the sympathy of the Association on the loss she had sustained in the death of her husband, late a member of the Society.

The CHAIRMAN quite fell in with Capt. Russell's views, and should second the motion.

Mr. MACKINDER supported it; at the same time, with Capt. Russell's permission, he should like the motion altered so that two letters should be written—one to the widow of an ordinary member, as already proposed, and

the other to the widow of Prof. Robertson, who had been an hon. member of the Association.

Capt. RUSSELL would be very happy indeed to so alter his motion as to include both letters. He thought the profession in general had sustained a loss by the death of Prof. Robertson.

The CHAIRMAN endorsed Capt. Russell's remarks, and it was decided that the letters should be written and signed by the Chairman and Secretary.

The presentation of the statement of accounts was then proceeded with.

Capt. RUSSELL said he received from the late treasurer (Mr. Spencer) on June 1st, £10 11s. 2d. Since then he had been successful in collecting £12 11s., thus making a total of £23 2s. 2d. There was about £12 of subscriptions due, and he dare say he could get in perhaps £5 of that. The cash in hand on December 31st was £13 9s. 2d.

Mr. MACKINDER thought the statement of accounts ought to be published, also the names of the members in arrears with their subscriptions. He thought that would perhaps enable the Treasurer to get the money in better. It seemed to him rather a large amount to be outstanding; there was as much money in arrears as they had in hand.

The CHAIRMAN agreed with Mr. Mackinder that there was a large amount outstanding; but the question of publishing the names of members was an open one.

Capt. RUSSELL said they had simply to put into practice their Society rules, and remove the names of members in arrears.

The CHAIRMAN believed in giving members in arrears a certain time to pay up.

Capt. RUSSELL said he had written to each one three times.

The CHAIRMAN remarked that members in arrears were no use to the Association.

Mr. MACKINDER remarked that the members' names who were in arrears were mentioned at the annual meeting, and then only when the statement of accounts were presented.

Mr. WRAGG said the Southern Counties Association sent round notices to the members whose subscriptions were due, so that they had an intimation when they ought to pay. In the Midland Counties Association the Treasurer sent a notice to each member about the first or second of January, stating that the subscription was due. He did not like the idea of posting the members' names who were in default. It was difficult to get members, and when they got them, they must keep them. But at the same time, if they did not pay their subscriptions they were no use to the Association.

Captain RUSSELL explained what means he had taken to inform the members whose subscriptions were owing. Circulars were sent out in July and October.

Mr. MACKINDER said he believed the Norfolk and Eastern Counties Association published a list of members in arrears every year.

Mr. BANHAM observed that they ought simply to carry out their rules.

Mr. SMITH (of Huntingdon) proposed that the rules should be put in force against those members who had not paid arrears before the next meeting.

Mr. WRAGG seconded it, and it was carried.

Mr. MACKINDER then proposed that the accounts be passed.

Mr. GOOCH (hon. sec.) seconded, and the motion was unanimously agreed to.

The next business upon the agenda was the election of officers.

The CHAIRMAN had very great pleasure in proposing that Mr. Greaves be re-elected as President. He thought the Secretary should be instructed to send a telegram conveying the sympathy of the Association to Mr. Greaves in his

illness, and asking him if he would stand for re-election. The Chairman hoped his motion met with the approval of the meeting.

Mr. MACKINDER did not like the idea of entirely confining the officers of the Society to one or two persons. He therefore proposed the present Chairman, who was senior Vice-president in 1887, as President of the Association for the ensuing year. He did not say anything against Mr. Greaves, but on the contrary thought he had done his work remarkably well. At the same time, they had men amongst them in Lincolnshire who were capable of taking the office, and he therefore proposed the election of Mr. Hartley to the office of President.

Captain RUSSELL seconded. He thought Mr. Greaves would be equally pleased with themselves by the election of Mr. Hartley.

Mr. GOOCH supported the motion, which was carried.

Captain RUSSELL said he quite agreed with the proposal to send a telegram to Mr. Greaves.

Mr. HARTLEY (the Chairman) did not expect he was going to be elected President for the year; although both himself and Mr. Frear were Vice-presidents. He thanked the members for his election, and would do his best to render the Association all the help in his power. He would also endeavour to carry out the duties of his office as fully as possible. (Hear, hear.)

The PRESIDENT (Mr. Hartley) said he had great pleasure in proposing that a vote of thanks be given to Mr. Greaves for the manner in which he had carried out the duties of his office during the past year.

Mr. GOOCH said, as Secretary to the Association during the year which was past, he was happy to be able to second the motion. Mr. Greaves had taken a lot of work upon himself in various ways, such as getting papers, etc.

The vote of thanks was agreed to, and it was decided to send the following telegram:—

"To Greaves, Knott Mill, Manchester.—Meeting offers sympathy, hopes for speedy recovery, unanimous vote of thanks accorded.—HARTLEY, Grantham."

It was also agreed that a letter should be sent as well.

Mr. BROOKS (Fulbeck) said he begged to propose Captain Russell as Treasurer again for the ensuing year.

The PRESIDENT seconded, and Mr MACKINDER, remarking that they could not have a better one,

The motion was carried.

Captain RUSSELL said he should be very glad to undertake the duties of Treasurer for another year, and he hoped to get in the greater part of the back subscriptions.

Mr. MACKINDER proposed that Mr. Greaves should be elected as vice-president. This was seconded and agreed to.

Capt. RUSSELL proposed Mr. Frear's re-election as vice-president; also that Mr. F. W. Wragg should be appointed a vice-president.

Mr. GOOCH seconded, and the motion was carried *nem. con.*

The PRESIDENT said they must now proceed to the election of a Secretary, who was the hardest-worked man in connection with the Association. He proposed that Mr. Gooch be asked to take the office for another year, and thanked for the courteous manner in which he had performed the duties.

Mr. FREAR seconded, and hoped Mr. Gooch would continue in office.

Capt. RUSSELL said whenever he had come into contact with the hon. sec. during the past year he had been struck with the very efficient manner in which he performed his duties. (Hear, hear.)

The motion was then put from the chair and carried.

Mr. GOOCH, in again accepting office, thanked the members for the honour conferred upon him. He had scarcely sufficient time to devote to the work; but still what he could do he was willing to give for the benefit of the Associa-

tion. He should endeavour to carry out his duties in a similar manner to that of last year, and also try to get new members for the Society.

The next item on the paper was proposing of new members.

The PRESIDENT said he should like to have seen at least half a dozen new names put forward.

There being no proposition, the PRESIDENT said they now came to a very interesting part of the business, which was to ask Mr. Frear to read a paper which he had prepared for that meeting.

Before the reading of the paper, Mr. J. MACKINDER, rising, said he had intended giving notice to the Secretary, prior to the annual meeting, of a very important subject which he wished to bring forward. That was, the election of a member on the Council. Some of them would remember that three years ago they entered into an arrangement with several other societies, that each should support the other in the election of a member to the Council; each society to have the nomination of a member every fourth year. They had been enabled to make other members of the Council, and it was now their year, in connection with the other societies, to nominate a member. He had pleasure in putting forward their first president, Capt. Russell, as nominee for the year, which, in conjunction with the other societies, he hoped, met with their approval. He need scarcely mention the names of the societies, but he was sure they ought to do all they could to support Capt. Russell as their nominee for membership to the Council. Capt. Russell was one of the hardest working members of their Society, and he was also a practical man, and doubtless would prove of great use upon the Council as the representative of that district. In conclusion Mr. MACKINDER said: I have very great pleasure in proposing that Capt. Russell be named by the President for the year as our nominee for the Council.

Mr. GOOCH said he had pleasure in seconding the motion, if Capt. Russell would only consent to represent them.

Mr. WRAGG remarked that there were seven men to be elected on the Council this year.

Mr. MACKINDER said it was nothing but fair that the other societies included in the agreement should now support them (the Lincolnshire Association).

The PRESIDENT said he supposed the proposition was strictly in accordance with the arrangement entered into with the other societies. He was not one of the partners to the agreement, so he could not say who came first or last. He hoped they were quite sure of being perfectly regular.

Mr. WRAGG said the President would see a moiety of the cost of sending out the circulars for the election of the members to the Council in the accounts both last year and the year previous.

The PRESIDENT asked if there was any other name to propose; and there being none, the motion was put and unanimously agreed to.

Captain RUSSELL said he hoped, in a question like that, every member had carefully considered the decision aimed at. If they considered he was a fit person in their own minds to carry out the duties, well and good; but if any gentleman had any hesitation he ought to speak before it was too late to say so. He was not ambitious, but always preferred giving way in anything with which he was connected, if by doing so he could make way for a better man. Well, if he were elected to the honourable office as a member of the Council, he should be ambitious to carry out the duties in as efficient a manner as possible, and should consult the views of the members of the Lincolnshire and other associations. They must remember this, however, that as a member of the Council he was but a unit, and could not promise to do anything single-handed. He would simply be one man among many, but they might depend upon his voting and speaking in support of any resolution in accord

with their views. He pledged himself to do his utmost for them, but at the same time by himself he could do nothing.

Mr. WRAGG thought the matter should be placed before the other associations at the earliest opportunity.

The SECRETARY said he would write immediately. Perhaps Mr. Wragg could tell him whether there was anything else to be done, such as the sending out of circulars and so on.

Mr. WRAGG said that circulars would have to be sent out to the separate associations. Mr. Simpson, of Maidenhead, would take care that the arrangement was brought under notice.

The PRESIDENT then called upon Mr. Frear, who read the following paper:—

MR. PRESIDENT AND GENTLEMEN,—It is with very great diffidence that I rise to respond to our Secretary's invitation to read a paper, the subject being

SOME DISEASES AFFECTING FOALS.

I must crave your indulgence inasmuch as the few remarks I have to make are principally of a practical nature, and have been put together during a few hours snatched from the hurry of country practice. Still, I venture to hope that the subject will commend itself to Lincolnshire veterinary surgeons, situated as you are in the heart of the finest breeding country in the world, whether for hunters or shire horses, and I trust that it will elicit a good discussion, and that we shall all be benefited thereby. Time alone will not allow me to enter into all the diseases that foals are liable to, but I will confine myself to what I consider the principal, and the first to which I shall call your attention is Diarrhœa—commonly known as the White Scour. Diarrhœa of foals, from my own observation, is very frequently a serious matter, especially as the veterinary surgeon is frequently not called in until the malady has taken firm hold, and but little chance is left to assist to a recovery. The Diarrhœa is usually the first symptom noticed; evacuations are frequent, fluid of a light colour, and some smell. The appetite becomes fickle, foal unusually recumbent; when made to rise, perhaps goes to the teat, as though ravenous, but sucks little. If the Diarrhœa is not soon checked emaciation rapidly follows, and the animal dies. The cause is undoubtedly to be looked for in the milk of the dam (although exposure and unsanitary surroundings are predisposing causes); and it frequently arises from exactly reverse conditions. Mares that have lived the winter on food of an innutritious character are just as likely to have their offspring suffering from Scour, as the mare that has been fed during the same period on highly nitrogenous food. Working the mare shortly after foaling, as many do, and keeping her away too long, directly her head is set for home, away she goes, anxious to get her udder relieved; and the foal, eager to fill his belly, overdoes it, gets Diarrhœa, and a good thing for him if it does not last too long. To the milk we must look for the cause, and treatment will be of little use to the foal until, by medicine and altered diet, we have materially changed it. Our first inquiries, therefore, should be as to the condition under which the mare has existed for some time previous to foaling. If, and it is often the case in my practice, the dam has been living well, I invariably give a full dose of aloes, order exercise, and the food to be changed as much as possible. To the foal, according to age, if seen early, I give castor oil combined with a stimulant, peppermint being a favourite with me. A powder consisting of equal parts of soda carb. of magnesia, or soda, or mag. carb. ginger and p. rhei. The dose, being from 1½ to 3 or 4 drs. is useful, if Diarrhœa continues. If much irritation and pain exist, I have seen benefit from the use of chlorodyne 30 m. to ½ drs.; warm rugs to belly and injections of starch gruel, or cold linseed tea, or rice-

water. Whilst the mare is in physic, I insist on the udder being stripped as much as possible and the strength of the foal kept up with raw eggs, well whisked, fresh cows' milk sweetened, or gruel made of cooked wheat-flour. If the mare has been living the reverse of this, a change to better diet is advisable—four or six ounces of mag. sulph., or six or eight ounces of ol. lini., may be given two or three times in a bran mash, but I never hesitate to give a dose of physic. I should have liked to relate one case where the mare was unmistakeably the cause of all the mischief. In May, 1885, I was requested to see a valuable cart foal four or five days old, said to be purging; and so it was. The mare had been working up to date, was fat, and one hind leg showed traces of an attack of inflammatory Œdema. As no alteration had been made in her diet, I directed it to be done, and gave her aloes, eight drachms, treating her and foal, whilst this was acting as already described. After this had ceased the foal returned to the milk, but Diarrhœa, though improved, continued. Ordered mare entire change of food, and gave her soda sulphis and gentian twice a day. Tried alkalies and vegetable astringents; and as these had no permanent effect, gave dilute nitro hydrochlor. acid. Some improvement followed this, but soon a complication appeared; viz., Rheumatism. Stimulating liniments and blisters externally: Salicylate of sodæ, liq. arsenicalis potas., bicarb. and colchicum. Colchii. failing to alter things, I suggested to the owner to wean it, but he sadly wished to try a little longer. At last, however, the foal became such a miserable cripple, and I advised him to knock it on the head. He then weaned it; in a month it was sound, except for stiffness along the neck, which still remains. The mare was put to again, turned out all next winter, fed well, and the foal of the year never ailed. Where altered diet and medicine fail to cure, I strongly recommend that cow's milk be substituted, and the foal enticed to eat crushed bran, oats, etc.

We meet with another form of Diarrhœa in foals that have been recently, or for some little time, turned out. And it arises from the grass being too succulent, or in some instances from chill or exposure to storms, frosty nights followed by wet. The foal is found with back up, coat steaming, tongue furred, breath offensive, loss of appetite, and purging—watery and stinking fæces. Here again I would recommend castor oil, combined with a stimulant, and followed by a dose of æther chlor. and æther nit. If pain exists tinct. op. and chlorodyne; have him comfortably housed, and rubbed dry and warm. Have seen much benefit by well rubbing the belly with stimulating liniment or mustard, and then winding a small blanket, previously heated, round the body, and secured with stitches or skewers. Starch injections are also useful. If no relief is obtained, small doses of brandy with eggs, or wheat flour gruel. As the mare's udder is usually relieved, allow exercise, and a mild aperient, and a change of food for a few days. Dry barley is a *sine qua non* with breeders in my neighbourhood. In this, as in the previous form, I think medicine should be given with discretion, and the *vis medicatrix nature* allowed a chance.

Arthritis, or Joint Evil, is a disease absolutely confined to young stock, as it only appears during the lactation period. A great difference of opinion appears to exist as to the cause of this troublesome and invariably fatal malady; one authority contending that it is due to an altered condition of the milk of the dam; another that it is owing to exposure to colds and chills lying in damp pastures, etc.; others, to a deficiency in the calcareous salts, particularly the phosphates, and to a scrofulous diathesis. At page 725 of "Fleming's Obstetrics," it is reported that Bollinger, a French veterinary surgeon, is strongly of opinion that it is Pyæmia, commencing with purulent Inflammation of the umbilical vein; and lays great stress on the want of care usually bestowed on newly-born domesticated animals—often lying

with an open wound in all kinds of filth; and with this opinion I am strongly inclined to agree, at the same time admitting the previously-mentioned probable causes to be predisposing, especially wet and exposure. It has been my lot to see many cases of "Joint Evil," and I have seen them occur in foals whose dams had carried them and brought them forth under every conceivable difference of diet, location, etc. And it certainly occurred to me, long before I had the good fortune to come across Fleming's invaluable work, that it was due to blood poisoning, and that the primary cause existed in the umbilicus, especially as I had noticed that many foals with joint diseases had Œdema, and sometimes purulent discharges from that part. As far as my experience goes, treatment of Joint Evil pure and simple is useless. I always did think so, but on reading Bollinger, in making a *post-mortem* examination on an animal that died of this disease, I found that there was Purulent Omphalitis, Thrombo-Phlebitis, with Thrombosis of the portal vein, Fibro-Purulent Arthritis of the stifle joints, and Purulent Periarthritis, Purulent Tracheo-Bronchitis, Embolic Infraction of the Lungs, commencing Endo-carditis of the mitral valves, and generalised Icterus; if they have half this, I cannot see how a cure is possible. It certainly goes to prove that the disease is due to a poisoned condition of the blood, and if any of you make up your mind that your patient is suffering with the aforesaid complications, have it destroyed at once. Have said nothing at present about symptoms, but first there is difficulty in moving, followed by great lameness, with swelling of one or more joints, evidence of great pain, loss of appetite, rapid wasting, and foal usually recumbent. If seen early, and the owner is anxious for treatment, warmth and comfort are first to be thought of. Authorities recommend stimulating liniments or blisters to be applied to the joint or joints. Should abscess appear in joint, open freely, and dress with antiseptics—as acid carbol. and glycerine, and salicylate of soda, cod liver oil and quinine, to be administered; and opium, aconite, or similar pain killers, but in none of them have I much faith. However, something may, and, I think, can be done towards preventing it, by keeping the dam in good health up to time of foaling, paying strict attention to clean linen, and general surroundings, careful tying of umbilicus, or where it breaks off short, and, tying not admissible, sear up the end with a hot iron, or touch it with nitrate of silver or sol. corrosive sublimate, or carbolic acid, and repeat if necessary; and by these means I think we may prevent some from going wrong.

When I am satisfied that the patient has Arthritis, the mare has a dose of physic, and as early as possible is sent to work. A few words about Umbilical Hernia, or Exomphalos. This is not, as a rule, a serious condition, and often spontaneous recovery takes place. However, there are many cases where the aid of the veterinary surgeon is sought, and it is to the treatment of Umbilical Hernia that I more particularly wish to call your attention. It may be congenital, or acquired, and there is also, as I am well aware, hereditary predisposition. The congenital form is produced during foetal life—the accidental by sudden or violent exertion, frequently neighing, and is occasionally seen after colicky pains, etc. Treatment: In the first place it is well to wait until the foal is weaned, when, should the Hernia still remain, careful examination must be made, and before ordinary methods of operation are decided upon, we must be quite certain that there is no adhesion; this being determined, we proceed to use the best means we know of to reduce it, and now what are they? Up to this last year I have operated on many colts in one and the same way, *i.e.*, by ligature, and with good results; but I had a case this last summer, which, through my own fault, diminished my faith, and caused me to seek for further information. The result of this search was that many and varied kinds of treatment were adopted, each vaunted by their respective advocates as infallible. But before going any further, I should like

to mention the case which modified my belief in the ligature. The subject was a thoroughbred colt, with a large rupture—could get three fingers into the hole in the abdomen. Recommended operation by ligature, but must tell you I cured a small rupture on this colt's own mother the previous year by twice blistering with biniodide of mercury ointment. Operated as usual, two skewers and ligature of wax-end, and as I quite thought successfully; but on his return to the box, he at once commenced to walk round and round.

This continuing for some little time, it occurred to me that there was something more inside the ligature than I had bargained for; so stopped his work and cut the string. This altered matters, and beyond considerable œdema, nothing untoward happened; but it taught me something, for when the swelling had—with fomentation, hand rubbing, etc., subsided, the Hernia was reduced to half its original size, and in a short time the application of a truss cured it. Now comes the result of my enquiries. I have read of sulphuric acid and nitric acid being applied with success, and Capt. Russell told me that he had used the former, and that Mr. Wyer, of Donington (who, I am very sorry to hear, has gone over to the majority), depended entirely upon the application of sulphuric acid. I saw this gentleman at our last meeting, at Louth, and he said that for some time it had been his sole treatment. His *modus operandi* was, without casting the colt, to rub equally over the whole surface of the enlargement a sufficient quantity of sulphuric acid. This sets up a considerable amount of tumefaction, which pushes the contents of the sac back into the abdomen, and the resulting eschar completes the cure. On asking him about untoward results, he answered, "I never had a failure."

The French recommend nitric acid, and this is applied by means of a spunglass brush, or cotton wool on a glass rod (the hair having been previously removed) round the base first, then over all. For large tumours it should be rubbed with friction for three to five minutes; of course, less quantity and less rubbing for smaller tumours. It naturally occurred to me that there was great danger of sloughing and protrusion of intestines, but they say that accidents rarely happen. Constriction of the sac by clam, as well as ligature, is largely resorted to, and Mr. Olver, of Tamworth, recommended me to use a clam similar to this [instrument produced], saying that it was his only method of treatment, and that he had no failure, whilst others stand fast by the truss. Certainly, where the colt has been handled, and can be attended to, especially if he be a well bred one, I should recommend the truss—different patterns, according to different opinions. At the same time it has its drawbacks; and the first cast foal I come across with Umbilical Hernia will have a dose of sulphuric acid, as it appears to me to have a good deal to recommend it, particularly if it can be effectively applied without casting. I also intend to try the clam, and if any one here is in the habit of using such an instrument, I for one shall be glad to hear something about it. Some recommend modern clams, *wooden* but the result is the same: hypo-injections of salt and water. Scrotal Hernia is scarcely a disease of foals, as it frequently returns in a few days. Should it be noticed later on, castration is the only cure. Have operated on two by covered operation in my life, one by separating skin, dartos, etc., and applying clam; it had tetanus, but ultimately did well. The second I placed a long clam over the whole lot, and the operation was a decided success. One more case which cannot be classed with *diseases* of foals, but abnormalities, and I have done. Some of you may remember its being reported by Prof. Axe, from a few notes supplied by me. The subject was a cart foal which I was requested by the owner one Sunday night in May, 1885, to see. On my arrival, he (the owner) said, "We have the queerest thing here that ever you or I saw." On entering the box, I saw a well-developed filly foal, and, on looking closer, found that she was the possessor of a mammary gland as large as a mare's with first foal, and teats about the

size of the first joint of my forefinger, and from them I extracted about a pint of what looked like, and ultimately turned out to be, milk. Thinking it of some interest, I sent part of the fluid to Prof. Axe, and he not only very kindly examined it, but reported that it contained all the elements of milk. I had never seen anything like it before, nor since, and although early lactation has been occasionally reported in infants, this case, so far as I know, is unique in veterinary practice. Nothing was done to the foal, the gland gradually got less, and at the present time looks the same as any other."

At the conclusion of the reading of the paper, the PRESIDENT complimented Mr. Frear upon his essay. At that time of the year, being a practical subject, it would no doubt give rise to a good discussion. He should be very pleased if Mr. Brooks would open the discussion. He did not ask Mr. Wragg, as they had no foals in London. (Laughter.)

Mr. MACKINDER thought Mr. Frear must have gone deeply into the matter to have produced such a paper, and he congratulated him upon his success. Proceeding to remark upon the subject of the paper, he said they had in their district a great deal of Joint Evil. Undoubtedly the cause was that pointed out by the essayist, and his (the speaker's) method of treatment was exactly as recommended. In Umbilical Hernia, however, he adopted a much more simple instrument than that shown by Mr. Frear. It was simply a piece of ordinary blacksmith's iron, with holes made by horse nails, and drawn up the same as they would a pig-ring.

Capt. RUSSELL inquired whether it would slough off.

Mr. MACKINDER replied that it would after a time. It had never to be taken off, but would come off by itself. Upon the subject of Diarrhœa in foals, he believed the principal cause was in keeping them up too long, and then turning them out. The change of food they got produced the disease. He used antacids in some cases, as there was very often great acidity of the blood, which generally passed off. In a great many cases astringents were useful. For diseases of the bowel in foals he recommended binding up.

Capt. RUSSELL was sure they would become tired of hearing his voice, as he had been upon his legs five or six times already. He had heard a large number of papers read in connection with that Society, but the one they had heard that morning was upon a subject of some considerable importance. It was a paper of good sound practical value. Now, with regard to the diseases Mr. Frear had touched upon, he agreed with him very much as to the treatment of Scour; castor oil was a good medicine to check the evil. Aloes might be given with much satisfactory results in a good many cases, but he was inclined to think that it should be used with caution. It was the greater kindness, however, in extreme cases, to put the animal out of misery altogether. He noticed a remark of Mr. Frear's with reference to the preparation of the mare previous to foaling, and he quite approved of it. He thought sometimes that if veterinary assistance was called in earlier, it would prove of immense service to owners of cattle. And in other cases, his experience proved that in simple affections, in 99 cases out of 100, the animals were far better left alone. He quoted instances in support of his contentions. With regard to Umbilical affections, he believed in the system adopted by the late Mr. Wye, viz., that of using sulphuric acid. It ought to be rubbed in; and he could not call to mind a single instance of Hernia where the treatment had proved ineffectual. Scrotal Hernia was better left alone. He then proceeded to describe his method of castration.

Mr. GOOCH quite agreed with Mr. Frear with regard to patent clams, and the use of caustic. He thought Arthritis was in some instances hereditary.

Mr. SMITH (of Huntingdon) was much struck with Mr. Frear's description of the filly foal having a mammary gland. He dwelt upon the formation of

multiple abscesses, and said with respect to the treatment of Diarrhœa, he was inclined to believe that mustard was more safe.

The PRESIDENT had known of good effects from pepsines, followed up by cod liver oil in Diarrhœa. He did not dispute the claims of sulphuric acid, as advocated by Captain Russell in Umbilical Hernia, but in the case of open wounds there was nothing better than binding, provided that the ties were of sufficient thickness. Of Scrotal Hernia, he had never come across a case.

Mr. WRAGG was in favour of tincture of camphor in cases of Diarrhœa. It was also good in Influenza.

Mr. BANHAM said with regard to Arthritis he had no experience in his own district. But his opinion upon the subject was that it was due to non-nutrition of the tissues during the period of gestation. He had never had an opportunity of following the period of gestation in mares, but he had of sheep. As most of them were aware, it was the custom on some farms to feed the ewes up for a month or two to strengthen them, as they said, before they were put to the tups, and then to allow them to fall off a bit until they were about to lamb, when they were pushed on again. Now, he thought the whole of that was a mistake. During the period of gestation the animal's strength ought to be kept up, as the disease under notice, or at any rate some of them, were due to weakness of the dam. On the subject of Umbilical Hernia, sulphuric acid might be useful, he admitted; and with regard to Scour or Diarrhœa in foals, in most of the cases where he had been called in the mare had been worked, and the foal kept without milk for some hours. If they took the trouble to milk the mares, they would find in a great many cases that it would save after effects. As to treatment, well, he had found antacids or alkalies equally good.

Mr. FREAR, replying upon the whole discussion, said he should like to ask Mr. Mackinder how long he allowed his clam to remain on?

Mr. MACKINDER replied, sometimes a fortnight or three weeks, and then let it drop off.

Continuing, Mr. FREAR said Captain Russell, he thought, tried matters very much the same as himself, so that he had nothing to say to him.

Captain RUSSELL proposed a vote of thanks to Mr. Frear for his paper, and in doing so wished to offer a remark upon the use of camphor. He always used it in his household, and considered its use equally as beneficial to animals as to human beings.

Mr. GOOCH seconded the vote of thanks, observing that he had learned a great deal from the paper, and thought Mr. Frear had taken up his subject in a thorough and exhaustive manner.

The vote was then unanimously accorded, and suitably acknowledged by the essayist.

A conversation ensued as to the next place of meeting of the Society. The merits and demerits of Doncaster, Gainsboro', Boston, and other towns in the county were each and all brought forward; it being generally held up as a necessity that there should be a good railway connection with the place selected.

Finally, Captain RUSSELL proposed Lincoln. Mr. SMITH seconded, and it was decided that the next gathering of the members of the Society should take place in that city.

Mr. SMITH (Huntingdon) promised to prepare a paper, which he would read at the next meeting.

The concluding item in the way of business was the exhibiting by the members of many interesting pathological specimens.

Captain Russell produced something taken from the esophagus of a horse which had died at the age of thirty-four years.

Mr. GOOCH mentioned that he had a curious specimen at home of two embryo calves.

The proceedings terminated with a vote of thanks to Mr. Hartley for presiding.

The members afterwards dined together at the Angel Hotel, the President in the chair, and Mr. Frear occupying the vice-chair.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE annual meeting of the Society took place at the Queen's Hotel, Leeds, on the 27th of January, the President, Mr. Phillip Deighton, in the chair; the following members were also present:—Messrs. Geo. Carter, W. Lodge, H. Snarry, T. C. Toope, Hanson, J. S. Carter, Geo. Whitehead, A. W. Briggs, R. H. Robertson, Chambers, H. Cooper, Jas. Scriven, Anderton, Smith, and Axe.

Apologies for non-attendance were received from Professor Williams, and Messrs. Fletcher, T. Greaves, Pickering, Bale, Danby, Bowman, and Dray.

In consequence of the decease of the Secretary, Mr. Wm. Broughton, the Treasurer read the minutes of the previous meeting, which were confirmed.

The election of Secretary was then proceeded with, and after a discussion as to whether the dual office of Secretary and Treasurer should be held by one gentleman, it was ultimately carried unanimously that Mr. Greenhalgh be elected Secretary, and that Mr. J. E. Scriven be Treasurer in place of Mr. Greenhalgh, who resigned that office.

Mr. MASON nominated Mr. McCormick, of Leeds; and the PRESIDENT nominated Mr. Ridley, of Bellerby, as members of the Society.

Mr. ANDERTON made a few very eulogistic remarks anent the character and capabilities of the late Secretary (Mr. Broughton), who had been connected with the Society since its formation, and had fulfilled the office of Secretary for upwards of twenty years. He proposed that the sum of £50 should be granted out of the funds of the Society to the family of the deceased gentleman as a token of the respect in which he was held, accompanied by a letter of condolence. Mr. B. SMITH seconded the proposition, which was supported by several members, and ultimately carried unanimously.

Mr. GREENHALGH proposed that, "The meetings of the Society should in future be movable from town to town in the county, with the exception of the annual, which would be as well always held in Leeds."

Mr. TOOPE seconded, supported by Messrs. Carter, Lodge, and others.

The proposition was carried, and York was decided upon as the fixture for the next quarterly meeting.

Two or three interesting cases were then mentioned by members, after which the President proceeded to read his Address:—

GENTLEMEN,—You have done me the high honour of electing me to fill for the forthcoming year the presidential chair of your Association. I thank you sincerely for this mark of confidence and esteem; and, in accepting the position, I assure you I do so with many misgivings as to my ability to discharge properly its duties. Indeed, I cannot hope to discharge them in the same satisfactory manner which our late worthy president did.

And when I heard of the death of our late but esteemed secretary, I felt that I was placed in a still worse position, as he was always most courteous and obliging with various little hints and suggestions. I am afraid the Yorkshire Veterinary Medical Association will greatly feel the loss of our faithful friend. You must not expect a very elaborate or scientific address from me, as the facilities in the country are very meagre compared with our townsmen,

who can meet each other and attend the various scientific lectures which are constantly being given in towns. Few arts or sciences, if any, have undergone greater development during the last fifty years of her Majesty's reign than that of veterinary surgery and medicine, and we are rapidly following in the footsteps of our medical friends, and recognising their medical treatment as being applicable to our patients in many cases.

We, too, have looked upon anæsthetics, the antiseptic treatment of wounds, the discoveries of the part played by micro-organisms in the production of disease and in the preventive measures called into operation, such as disinfection, isolation, and inoculation, and welcome their introduction with gratitude and pleasure. We, too, have signalised the startling additions to veterinary knowledge, and our columns show increased signs of unabated energy in the profession, mingled with more care and painstaking in practice and veterinary reasoning than at any prior period.

We may look forward with growing anxiousness and hope to have success attending the treatment of hitherto almost hopeless forms of disease and injuries. I may call the student who has embraced and entered the profession to remember that he has an honourable duty to fulfil, a calling that may be all but what he expects in after life. But with patience, hope, and perseverance as a stimulus, he can more easily battle with emergencies and gain a complete victory over the hard and studious duties.

It is very questionable if our profession sooner or later does not equal the position of our medical friends, for who is more likely to inspect the nuisances arising from the decomposing materials of our farms and stables? and who is more likely to give a good sound opinion regarding the whole hygienic conditions respecting agricultural holdings, or the construction of stables for the benefit of the public or the animals that occupy them, than a member of our profession? And I hope the time will come when, with union and an invincible determination, some of our members will be veterinary officers of health.

Let us put our shoulders to the wheel and confidently unite in our endeavours to do justice to our fellow men, in whatever sphere of our profession we may be called to.

Gentlemen, just one word regarding the sale of meat. You must take it for granted that I do not advocate the wholesale exposure of meat unfit for human consumption, nor do I positively condemn the sale of animal food, unless it has been thoroughly and professionally inspected by a veterinary surgeon.

I cannot understand how a medical officer of health, or the nuisance inspector, of this date, can state clearly the condition of a carcass when he has had no practical or yet theoretical knowledge of the optical appearance of morbid or healthy tissues of our domesticated animals.

I suppose we shall be obliged to contend with the Court until all the contagious diseases are scheduled under the Contagious Diseases Animals Act.

And even then, I suppose, we shall not be exempt from Court obligations. I am referring now more especially to Tuberculosis, being an important and practical part of my address.

We are all aware that Tubercle in its early stages, and sometimes in a well-marked history, how difficult it is to arrive at any definite conclusions regarding this malignant affection.

Now, I am told that Tubercle of the lung can positively be diagnosed by the aid of the microscope; and a friend of mine recites a case, of which he has submitted three inoculated tubes of sterilised gelatine for my inspection, which I present, obtained from the sputa of a heifer two years old, previous to slaughter.

Now, if this is correct, and I have not the slightest doubt but what it is, how invaluable an instrument the microscope is, when we know we have at

hand by minute but simple investigation a positive aid to a correct diagnosis of such an insidious disease as Tubercular Phthisis, which is such a scourge to the country !

We should be placed in a position to say without hesitation when we have seen the micro-organisms, as to our results of treatment.

Tubercular disease has demanded the closest investigation in relation to public health, and owing to the allegations during recent years, that the use of the milk of Tuberculous subjects was calculated to induce that disease in the human subject, it has become imperative that the medical officers should maintain a general supervision over the health of the country, and to guide the sanitary authorities in their action. But while we have on the one hand the serious fact that a great number of our milch cows are affected with this disease, we have on the other hand the more hopeful aspect of the case, that so far we have no positive proof of Tuberculous infection in milk itself when imbibed by the human subject.

Bovine Tubercle is very easily conveyed to fowls, and it is a well-known fact that its virulence increases so far as the fowl and rodent species are concerned, these animals becoming more susceptible to it by a continuous inoculation, and developing it in an exceptionally short period. More could be said about Tubercle, but the time is short, and I do not want to detain you longer, or excite your patience to indifference.

I will pass on to another subject that has not been considered, or at least received that amount of attention from our leading professional men, nor has it been mentioned particularly by the Humane Society or the Non-Vivisectionists, for in the case of the former, their thoughts have been engaged in another direction, viz., that of Pathogenic Organisms, which, I suppose, will exist until it has reached its limits, and the latter, regarding our profession, did engage their intellectual reasoning for a while on the subject of docking. But the excitement was naturally evanescent, and left stillness in possession. Much has been said *pro et con* about the amputation of the tail ; but I will draw your attention to a more barbarous and cruel proceeding than that of docking—extracting the temporary incisors for the purpose of forwarding the growth of the permanent ones, so that the animals may appear older than they really are. This operation is not usually resorted to in practice by members of the College, who might allay the pain to a certain extent by their professional knowledge, if they wished to participate in this illegal, inhuman action ; but by grooms, blacksmiths, and horse-breakers, who subject the animals to this cruel process.

If the permanent incisors do not appear sooner or later to their satisfaction they proceed to carve, cut, pare, and burn the buccal membrane and gums over the seat of the supposed tooth, and in the case of the male over the seat of the canine teeth.

Now, gentlemen, which of the two operations should be thoroughly eradicated from the civilised world, and which of the two should receive the most attention and condemnation from the profession or Humane Society ? I leave the query for your consideration.

From a practical point, veterinary surgeons are often placed in a position that warrants great caution when giving a certificate of examination regarding age, for often there are conditions existing which lead to suspicions that the teeth have been tampered with. Further, the animals are bought at an age when they are expected to perform work which, if the teeth have been drawn, are unfit and unable to do so. The result of this is, the horse breaks down under the severe strain, and you, who recommended him are either precipitated into litigation or blamed for a supposed wrong calculation of the age.

This condition of things wants a thorough investigation and abolishing

altogether by some strict method, and an early abolition of this premature extraction will, I certainly think, be hailed with pleasure by most of us.

The usual vote of thanks was accorded to the President for his address, and the meeting terminated.

The annual dinner was dispensed with on this occasion, in consequence of the decease of the late Secretary.

W. F. GREENHALGH, *Hon. Sec.*

ROYAL AGRICULTURAL SOCIETY.

At the monthly Council meeting, held on February 1st, Sir JOHN THOROLD reported his election as Chairman for the year. The death of the late Professor Robertson, Principal of the Royal Veterinary College, having been officially announced to them, the Committee recommended that a letter of condolence with the family be written on behalf of the Society. They also recommended that Mr. Chandos-Pole-Gell and Professor Axe be added to the Committee.

Professor BROWN had presented the following report :—

Report on the Contagious Diseases of Animals in Great Britain during 1887.

Pleuro-pneumonia.—According to the weekly returns published in the *London Gazette*, during the past year there have been 618 outbreaks of Pleuro-pneumonia in Great Britain, or sixty-five more than in 1886. Although there has been this increase in the country generally, it has not been equally distributed, for there has been a decrease of thirty-one in the number of outbreaks in England, while there has been an increase of ninety-five in Scotland, and one outbreak was reported in Wales, where the disease did not exist in the previous year.

In England it was most prevalent in York (West Riding), the Metropolis, Lancashire, Essex, and Kent. The West Riding was the only county in England in which there was any material increase, and there the outbreaks rose from twenty-one in 1886 to fifty-four in 1887. In Scotland the disease was most rife in the counties of Lanark, Edinburgh, Fife, Forfar, and Perth.

Swine Fever.—There were 7,237 outbreaks of this disease reported in Great Britain during the year, or an increase of 424 as compared with 1886. In England the outbreaks numbered 6,937, an increase of 450; in Wales there were 192, a decrease of forty; and in Scotland 108, or an increase of fourteen over the 1886 returns. The disease was most rife in the West Riding, Lancashire, Northampton, Stafford, Norfolk, Kent, Wilts, Suffolk, and Derby in England; Glamorgan, Denbigh, and Montgomery in Wales; and Edinburgh, Renfrew, and Aberdeen in Scotland.

Anthrax.—Of this disease 235 outbreaks were reported during the year: 213 of these were in England, one in Wales, and twenty-one in Scotland. The English counties in which it prevailed most were Lancashire, Northampton, Lincoln (parts of Holland), Nottingham, Somerset, York (West Riding), and Norfolk; while in Scotland most cases were reported from Aberdeen, Banff, and Edinburgh; and in Wales the single outbreak took place in Pembrokeshire.

Rabies.—There were 496 cases of this disease reported in England during the year, but none in either Wales or Scotland. There were more than half these cases in Surrey, but this was due to a serious outbreak among the deer in Richmond Park. The other counties in which Rabies has been most prevalent were Lancaster, Chester, Stafford, and Hants.

Foot-and-mouth Disease.—Several alleged outbreaks of this disease have been reported during 1887, but a careful inquiry proved that the diseases with which the animals were affected were not Foot-and-mouth, but other affec-

tions which have some of the symptoms which occur in Foot-and-mouth Disease.

Milk Scarlatina.—Up to the end of the year ten different outbreaks of an eruptive disease on the teats of cows were found and investigated. But although in their general clinical appearance, as well as in the microscopic character of the organisms found in them, they agree with the description given of the Hendon Cow Disease, none of them were coincident with Scarlet Fever in the districts in which they occurred. Of these outbreaks five were in Middlesex, one in Lincolnshire, one in Somersetshire, one in Wiltshire, one in Edinburgh, and one in Lanark.

A suggestion by Mr. JOSEPH DRUCE for the appointment of a further provincial veterinary surgeon for Oxfordshire had been considered, and the Committee recommended that Mr. J. P. S. Walker, F.R.C.V.S., of Oxford, be added to the list of provincial veterinary surgeons of the Society.

The Secretary had reported that, in accordance with the resolution of the last meeting of Council, a deputation from this Society and other agricultural societies had waited on Lord John Manners at the Privy Council Office on the 9th December, to urge upon the Government the necessity of adopting uniform and stringent measures, both in this country and in Ireland, to stamp out all existing cases of Pleuro-pneumonia. Professor Brown had informed the Committee that the Agricultural Department had communicated on the subject with the Irish Government, sending a suggested scheme, and that a Draft Order in Council dealing with the matter was now under the consideration of the Irish authorities.

A letter had been received from the Royal Counties Veterinary Medical Association thanking the Council for initiating experiments with regard to Symptomatic Anthrax. The following explanation had been received from Professor Penberthy as to the action of the Home Office with reference to the experiments conducted for the Society by the late Professor Robertson and by himself:—

Professor Robertson held a licence for the specific purpose of being able to comply with the instructions of the Society with regard to experiments on Anthrax and Quarter-ill.

The Royal Veterinary College was also duly licensed as required by law. It was taken for granted that the certificate held by Professor Robertson would suffice for those working in conjunction with or assisting him, and Professor Penberthy acted in this capacity.

On October 6th, 1887, he received from the Home Office a letter drawing attention to an abstract of the report published by the Royal Agricultural Society, "from which it would appear that certain experiments such as could not be performed without a licence from the Secretary of State under the Act 39 and 40 Vic., cap. 77, were performed by you. As no such licence has been granted you, the Home Secretary desires to know if you have any explanation to make in the matter." Professor Penberthy replied asking for a personal interview. This request was refused, and he wrote saying that he was assisting Professor Robertson, who held a licence for the purpose. On November 16th he received a letter from the Home Office stating that "the Home Secretary was satisfied that many, if not all, of the operations performed by you, which have been called in question, were performed contrary to the law, and that you rendered yourself liable to criminal proceedings. Neither the plea that you were acting as Professor Robertson's assistant, nor the plea that the operations were not experiments to which the Act applies, can be entertained. But for the lapse of time which has taken place, the Secretary of State would have directed a prosecution, and you must strictly understand that, in case of any further neglect to conform with the law, you will be immediately prosecuted."

The Examiners on the diseases of animals of the farm other than the horse, having reported that of students from the Royal Veterinary College who obtained the Diploma of the Royal College of Veterinary Surgeons at the examinations held in London, April, July, and Christmas, 1887, the following two passed the best examination: Mr. J. A. W. Dollar, M.R.C.V.S., 56, New Bond Street, W., and Mr. E. R. McHugh, Stokestown, Ireland; the Committee recommended that the Society's silver and bronze medals be awarded to these gentlemen.

LORD EGERTON of TATTON said it was very desirable that the question of the legality of experiments such as those made by Professor Penberthy should be cleared up. As he understood, an experiment which would be likely to preserve a herd from disease could not be carried out in consequence of the state of the law. With a view of testing the value of inoculation, but also with the object of preserving his own herd and those of his neighbours, he had had fifty-six animals inoculated. Since this inoculation none of these animals had suffered from the disease. Four died under the operation, but this was probably owing to the fact that there was not sufficient veterinary assistance at hand. He wished to have the same experiments carried out on his estate again. He had lost two valuable pedigree bulls from the disease, which were not of age to be inoculated when the experiments were made. He should be glad if the Council could take action in the matter by memorialising the Home Office.

In answer to questions, Professor BROWN explained that the real ground on which the Home Office made the charge against Professor Penberthy was that he himself operated, not holding a licence. In reference to the question of experiments on inoculation, these were actual experiments, and it was not certain at the time whether the animals would be protected by them. Professor Robertson's experiments were for the purpose of ascertaining whether the treatment would be successful. He had asked the Home Office, and no doubt the Secretary of State had had the best of advice before replying, whether he himself could perform experiments by the aid of assistants, for the purposes of his investigations into Swine Fever. He (Professor Brown) was told in reply that such experiments could not be performed by an unlicensed assistant. If an operation were performed with the distinct purpose of protecting an animal from disease, such operation would not be affected by the Act; but if it were performed for the purpose of ascertaining whether the treatment was beneficial or not, then such a course was illegal.

MR. DENT said that it being a purely legal question, he saw no necessity for memorialising the Home Secretary. Lord Egerton might have his herd inoculated, and let the matter be tested in a court of law.

LORD EGERTON replied that what he desired was the sympathy and support of the Council in taking some action in the matter.

MR. BOWEN-JONES said that farmers would not carry out these experiments for fear of legal proceedings.

SIR T. D. ACLAND said the dictum of the Secretary of State put a stop on all scientific efforts for the protection of our herds, so far as he could understand, and the Home Office appeared also to be very reticent in the matter of granting licences.

The Earl of FEVERSHAM suggested that a memorial should be drawn up setting forth the difficulties which had arisen after the dictum delivered by the Home Secretary.

After further discussion, in which Colonel KINGSCOTE, Mr. BOWEN-JONES, Mr. MARTIN, and Mr. STRATTON took part, it was eventually resolved, on the motion of Mr. JACOB WILSON, seconded by Mr. WAKEFIELD, that the President and Lord Egerton of Tatton, as representing the Society, be requested to seek an interview with the Home Secretary on the subject, in conjunction, if possible, with representatives of the Royal Veterinary College.

Army Veterinary Department.*Gazette*, January 31st.

The Queen has been graciously pleased to give directions for the following appointment to the Most Distinguished Order of St. Michael and St. George:—To be an Ordinary Member of the Third Class, or Companion of the said Most Distinguished Order, John Robert Beech, Esq., an officer attached to the Egyptian Army, for services rendered in connection with the recent mission to the King of Abyssinia.

In our last Journal we referred to this well-merited distinction, which has now been officially confirmed. The editor of *The World* for February 8th thus alludes to it:—"The papers announce the appointment of 'Mr. J. R. Beech, an officer of the Army,' to be a Companion of the Order of St. Michael and St. George, in recognition of his services in connection with the recent mission of Mr. Portal to Abyssinia. Mr. Beech, it seems, is an officer of the Army Veterinary Department, who was lent some years ago to the Khedive for employment in the Egyptian Army. This is the first occasion, I should imagine, in which a veterinary surgeon has been employed on a diplomatic mission. Mr. Knox, Chief Accountant of the British Army, expressed the opinion before Lord Randolph Churchill's Committee that there was no body of officers in the Army more able and zealous in their own particular line than those of the Veterinary Staff. Certainly Mr. Beech must be a man of exceptional capacity, and one of whom his department has reason to be proud."

Apropos of the death of Mr. Aitken, recorded in our last, a hunting correspondent ("Triviator") in *The Field* of January 28th says:—"The 16th Lancers have lost in Mr. Aitken, veterinary surgeon, who died last week, not only a first-rate practical authority on horse flesh, but a fine judge of hunters and of their higher development—chasers. Many veterinary surgeons are not sportsmen by habit and instinct, nor is there perhaps any natural sequence between science and sport—between pursuit and pathology; but in not a few departments of the *ars veterinaria* the practical sportsman can give many a useful hint to his clients which may not be found in any compilation. As a tribute of respect to Mr. Aitken's memory, his brother officers gave up hunting till after the funeral."

By command of Her Majesty, a levée will be held at St. James's Palace on March 7th, by His Royal Highness the Prince of Wales. Veterinary officers who desire to be presented on this occasion by the Principal Veterinary Surgeon, are requested to send in their names to him not later than the 4th instant.

First Class Veterinary Surgeon Powell has returned to England from a tour of service in India, and is stationed for duty at Chatham.

Obituary.

Mr. W. J. Hinge, M.R.C.V.S., Hounslow, died on February 6th, at the age of seventy-three years. A local contemporary says of the event:—"The deceased gentleman belonged to an old Hounslow family, and the perseverance and industry which he had always displayed in his profession had gained for him the support and respect of all classes of the community throughout the whole of West Middlesex. Besides his extensive practice, the late Mr. Hinge for many years filled the position of District Inspector under the Contagious Diseases (Animals) Act, the duties of which he discharged with much ability. The deceased leaves a large family, and much sympathy has been aroused in consequence of the sad occurrence, which has deprived the locality of one of its oldest and most respected inhabitants, and many of the establishments in

the High-street have been partially closed during the week as a mark of regard."

Mr. T. Jex, M.R.C.V.S., died on February 15th, in London, aged seventy-seven years. Mr. Jex was retired from the Army many years ago, having served in the Scots Greys and the First Life Guards. Since retirement he engaged in business (not professional) in London, and was, we believe, very successful.

From Woodstock, Canada West, we have tidings of the demise of Mr. W. Irvine, M.R.C.V.S., who studied at Gamgee's School in Edinburgh, and graduated in 1863. The Woodstock (Ontario) newspaper of January 13th remarks:—"In the death of Dr. Irvine, veterinary surgeon, a well-known figure passes away. He was a man of great natural ability, and a most skilful one in his profession. Had his energy and ambition equalled his gifts, he could have attained wealth and position. He was a kindly man, who thought ill of no one. His passing away is like the removal of one of the old landmarks."

The following deaths have been reported by the Secretary of the R.C.V.S. :—

James N. Carter, M.R.C.V.S., Litcham, Norfolk	graduated	1839
S. Hodgson, M.R.C.V.S., Grussouther, Carlisle	"	1879
J. Darling, M.R.C.V.S., Tarvin, Cheshire ...	"	1851
H. Davis, M.R.C.V.S., late Blackheath, Kent ...	"	1873

Parliamentary Intelligence.

House of Commons, February 16th.

RABIES IN DOGS.

Viscount CURZON asked the President of the Local Government Board whether it was the intention of the Government to give effect, by legislation or otherwise, to the recommendations of the Select Committee of the House of Lords on Rabies in dogs; and whether it was in his power to lay upon the table of the House a return showing the number of deaths from Hydrophobia during the last ten years.

Mr. RITCHIE: The subject of Rabies in dogs is receiving the attention of Her Majesty's Government, and the Privy Council Office are in communication with some local authorities with reference to the restrictions which may be necessary in connexion with it. If it should be considered that further powers are required they will be asked for. If my noble friend moves for a return of the number of deaths from Hydrophobia in England and Wales from 1877 to 1886 the motion will be agreed to by the Government. The average annual number of deaths in England and Wales during the ten years referred to was 40, and the average number in London from 1878 to 1887 was seven. The total number of deaths in England and Wales from Hydrophobia in 1885 was 60, of which 27 were in London; in 1886 it was 26, of which nine were in London. The number of deaths in London in 1887 was two. I am unable to supply the total number in England and Wales for 1887.

Jurisprudence.

HYDROCELE, OR SCROTAL HERNIA.

At the Chester Country Court, on Dec. 9th, before Judge Horatio Lloyd, Mr. E. H. Lloyd, barrister (instructed by Mr. J. Tatlock), was for the plaintiff, and Mr. Cartwright for the defendant in an action brought by C. R. Topham, Darland Hall, near Wrexham, against James Storrar, jun., veterinary surgeon, Chester, for £35 14s. 6d. damages for breach of warranty on the sale of

horses. On the 7th May last, Mr. Lloyd said, Mrs. Topham went to Mr. Storrar's stables to see a pair of carriage horses which she had heard were for sale. She was accompanied by a friend (Miss Easterby) and her coachman. In inspecting the horses Mrs. Topham asked if they were sound, and defendant replied, "Oh, yes, they are sound; at least I am a veterinary surgeon, and I consider them so." She observed a blemish on the eye of one of the horses, but defendant said that had just been done by a flick of the whip and would be all right in a day or two. Mrs. Topham, expressing a desire to have the opinion of Mr. Edwards, veterinary surgeon, defendant said there was no use of that as he was a veterinary surgeon himself. Eventually, however, the animals were taken to Mr. Edwards, who examined them and at once said that one of the horses was as nearly as possible blind in the right eye. Notwithstanding this, however, she had at that time some degree of confidence in Mr. Storrar, and would not believe in the blindness, thinking, as defendant had said, that it was only a flick of the whip. When the horses were afterwards galloped in Souter's-lane defendant told them not to gallop them too much. He at the same time said the horses would go in single or double harness and were perfectly quiet to drive. A bargain being struck £110 was agreed on as the price of the pair, but defendant consented to take another horse worth £30 from plaintiff, so that the actual price paid was £80. The horse with the blemished eye did not recover so rapidly as the defendant had predicted, in fact it got worse instead of better, and was soon totally blind in one eye. The result was that in double harness it shied at everything, and in single harness it would scarcely go at all. In July something else was discovered to be wrong with the horse, and Mr. Edwards pronounced it scrotal hernia, an affection which could not have come into existence between May and July. This defect did not appear till after the horse had been severely exercised, and as the suggestion was made by defendant during the exercise in Souter's-lane not to gallop it too much that probably supplied the answer to the question why Mr. Edwards was unable to discover the hernia at the time of the sale. On the 10th August Mr. Tatlock, acting for Mr. Topham, wrote defendant requiring him to take back the horse complained of and repay the amount, else he would sell it and take proceedings against defendant. The reply was a letter from Mr. Cartwright offering to accept service on Mr. Storrar's behalf. The horse was accordingly sold by Mr. Cunnah for £22 1s., the auctioneer's commission being £1 14s. 6d., leaving £20 6s. 6d. Plaintiff therefore claimed for the one unsound horse £55, and £1 1s. for livery at the Grosvenor Hotel, less £20 6s. 6d. realised by the sale, or a total of £35 14s. 6d.

Mrs. Topham gave evidence supporting the opening statement, and in cross-examination admitted having tried to sell the pair of horses to Mr. Pell, of the Queen Hotel Stables, for £100 or £120. She also admitted getting herself and her groom photographed standing at the heads of the horses.

Mary Elizabeth Easterby and the groom were called, and R. C. Edwards and Wm. Knight Lewis, veterinary surgeon, Tarporley, deposed to examining the horse and finding it affected with scrotal hernia.

Mr. Cartwright for the defence denied the warranty entirely. In fact from the statement of Mrs. Topham herself it appeared that all she asked was about the condition of the eye. The word "sound" was observed upon, but never was made part and parcel of the contract; there never was between the two parties any stipulation that the horses were purchased on the distinct bargain that they were to be sound. So far from Mrs. Topham's relying upon defendant's statements, she at once went to her own veterinary surgeon to get them examined. If she was relying upon Mr. Storrar's guarantee that very circumstance alone surely displaced any confidence in her mind as to defendant's warranty. The fact was Mr. Edwards put them through a

thorough examination, and it was a perfectly open contract without any warranty on defendant's part. Besides, a full opportunity was given between the 7th and the 14th Oct., during which time Mrs. Topham was in possession of the horses, to discover any flaw.

The defendant, James Storrar, jun., in his examination, said Mrs. Topham asked, "Did you get any veterinary surgeon to examine the horses for you?" and witness replied, "No, being a veterinary surgeon myself." To this the lady rejoined, "What I mean is, will you have any objection to my veterinary surgeon's examining them?" Witness answered that he bought them only the previous week, and the groom told him one of the animals had had a flick in the eye with the whip. Mrs. Topham, after the examination of the horses, said, "Edwards has passed the horses. One has a mark in the eye, the other a slight corn, but I will take them for £110 if you will give me £30 for my chestnut mare." Witness was never asked a question about soundness and quietness in single and double harness. Witness advised her to see them in harness, but turning to her groom she said, "Williams, you have seen them in harness?" The groom replied in the affirmative, and the lady said, "That will do." Sometime afterwards Mrs. Topham meeting him, asked if he knew of anybody who had a pair of heavier horses, as that pair were all very well, but not big enough to run the brougham singly, especially in winter. Prior to that witness had driven the horses single and double, and they went very well indeed. He bought the horse complained of at Mr. Cunnah's sale, and had driven it ever since. The injury to the eye was merely external, caused by a blow he believed, and the animal was only partially blind in that eye. It was not true that it suffered from scrotal hernia, what was wrong being hydrocele, caused by a defect in castration, but it did not interfere with the working of the horse. It was not witness's custom to warrant horses, and he was not a horse dealer.

Mr. Lloyd: Did you not warrant a horse to Mr. Brassey that nearly killed him? (Laughter.)—Witness denied this, and also that he warranted another to a Mr. Davies and had to take it back. It was untrue that Colonel Hamersley recently asked witness to examine a black horse for him, that he said he could not pass it as sound, and that he (witness) bought it directly afterwards and sold it to Mr. B. C. Roberts as a sound horse. He told Colonel Hamersley the animal was perfectly sound except a cough, and that it was not fit to gallop. Upon that Colonel Hamersley said he wanted it for an Oxford friend, and so would not take it. In the evening Mr. Roberts asked him about the same horse, and he passed it with the exception of wind. Mr. Roberts risked that, and the horse was afterwards six weeks in hospital with the cough. He denied selling to Messrs. Parker and Clegg a broken-winded horse. Neither his father nor himself was a horse dealer, but he bought an odd horse now and again. Anybody would do that, and if Mr. Lloyd bought a horse he would sell it.

Mr. Lloyd: If I bought a horse from you I would sell it. (Laughter.)

Witness, in further cross-examination, admitted the horse in question had broken Dr. King's trap shafts, but it had been driven some time in it before that occurred. Witness bought it at Mr. Cunnah's sale for £22, but he considered it worth £55 as matching a pair. He knew it had hydrocele when he parted with it to Mrs. Topham, but he did not mention it because she wanted to have her own veterinary surgeon's opinion.

Re-examined: Mr. Herbert Brassey bought a horse from him in 1884, galloped and jumped with it and went away perfectly satisfied, saying, "It will do for me, and I don't care whether it does for my brother or not." (Laughter.) That horse was spoiled by bad riding, and now they blamed him for it. Mr. Ernest Brassey was an amateur in those days, and spoiled the horse. (Laughter.) Both Colonel Hamersley and the other gentleman

named as having transactions with him were perfectly satisfied and were still clients of his.

Edward Foy, groom to defendant, deposed to seeing Mr. Edwards examining the horse, and hearing Mrs. Topham say, when told it was blind in one eye, Mr. Storrar told her about that, and how it was caused, and it would be all right in a few days.

Neil Barron, V.S., Sutton, denied, after an examination of the horse, that it had scrotal hernia, and said it was hydrocele (which did not interfere with its usefulness). The mark on the eye had been caused by external injury, and there was no disease.

Cross-examined: Hernia was a very serious unsoundness, and hydrocele only a slight unsoundness.

James Storrar, senior, also denied the presence of scrotal hernia, and affirmed it was hydrocele. He himself had driven the horse in single harness without difficulty. Hydrocele was not unsoundness. Before leaving the box the witness protested against the way in which the case had been put for the plaintiff, and the amount of scandal allowed to be retailed.

His Honour said Mr. Storrar should leave that to him. There had been nothing imported into the case beyond what was necessary. No doubt it might be exceedingly disagreeable, but with such a tremendous conflict of evidence it was absolutely necessary.

Thomas J. Dutton, The Beeches, Saltney, who gave his evidence under protest, had seen the horse in question driven quietly by Mr. Storrar and Dr. King.

Cross-examined: Witness bought it at Mr. Cunnah's sale for Mr. Storrar.

In giving judgment, his Honour said the case certainly exhibited some of the usual characteristics of all cases of the kind, including an almost hopeless conflict of testimony. The plaintiff complained of three distinct breeches of warranty, and in substance the defendant's case was that there was no such warranty as to any of those subjects; and secondly, that if there was, the plaintiff did not rely upon them in any way. First of all it was alleged by the plaintiff that there was a warranty with reference to the horse's eyesight. Undoubtedly at the time of the sale the horse was suffering from an apparent injury to the eye, which was noticed and spoken about by both parties. Mrs. Topham had the horse examined by Mr. Edwards, of Newgate-street, her own veterinary surgeon, who told her that the injury was not the result of an accident, but was in the nature of permanent blindness, and would probably go worse. There was no evidence which would justify him in coming to the conclusion that Mrs. Topham relied upon the statement of Mr. Storrar with reference to the injury to the eye (viz., that it was merely caused by the flick of the whip) at all. Therefore he would dismiss that part of the case altogether. The second branch of the case was with reference to the alleged warranty that the horse (one of the pair sold at the time) was quiet in single and double harness. It was said that it was not until the horse had been three months sold that it was found on trial that it did not go well in single harness, but he could not accept that excuse, because Mrs. Topham was not unaccustomed to horses, and it was in consequence of what her experienced groom saw of the horses in question that she went to negotiate for their purchase. He preferred to believe that the reason why the horse shied was that the eye was becoming worse; therefore the trial of the horse in single harness was hardly a fair one. Even if there had been a warranty there was no evidence of any breach of it; and he doubted very much whether there was any real warranty that the horse was quiet in harness. Now he came to what was a more serious matter. The plaintiff alleged as the third ground of complaint of breach of warranty that the horse in question was suffering from scrotal hernia. Of course there could be no question that that was a serious

unsoundness, but its existence in the horse even now was denied by the defendant, for whom it was said that the complaint from which the horse was suffering was hydrocele. That the horse was suffering from one or the other was certain, and the difficult question to decide here was, whether there was warranty of soundness in this respect. Mrs. Topham, her friend (Miss Easterby), her groom, and Mr. Storrar, were the only persons present at the time of the giving of the alleged warranty. Mrs. Topham, Miss Easterby, and the groom, all swore that there was a distinct warranty given that the horse was perfectly sound; on the other hand, Mr. Storrar swore that not a word was said about the soundness. It was obvious that if he came to the conclusion that nothing was said about soundness, and that no warranty was given, he must convict Mrs. Topham, Miss Easterby, and the groom, of something that he could not hesitate to regard as anything else but perjury. He need not go that length, or anything like it. It was very possible—seeing that Mr. Storrar had many transactions of this kind, and seeing the desire there would be to avoid giving warranty—it was possible that he might have said something which amounted to a warranty, and which might have since escaped Mr. Storrar's recollection. He (the judge) could come to no other conclusion than that there was a warranty as to the soundness of the animal. Had there been a breach of it? The plaintiff said the horse was suffering from scrotal hernia, and veterinary surgeons were called to support that view. On the other hand, Mr. Storrar, his father, and a veterinary surgeon named Mr. Neil Barron, said that the horse was not suffering from scrotal hernia, but was suffering from hydrocele. But Mr. Barron, the witness of the defendant, admitted that even hydrocele was an unsoundness. Therefore he (the judge) found that there was a warranty of soundness and a breach of it. As to damages the plaintiffs had proceeded on the assumption that the horse was worth half the price (£110) of the pair, or £55, but it must be remembered that the horse in question had an injury to the eye, and he would knock off that estimate of the value £12 10s. Deducting this sum from £35 14s., the amount claimed, there was left a balance of £23 4s.; and he would give judgment for plaintiff for that amount. As to the question of costs, he had considered that two out of three grounds of complaint by Mrs. Topham had fallen through, and that for three months Mrs. Topham never uttered a syllable of complaint against the horse, but endeavoured on different occasions to dispose of both at a price higher than she had actually paid for them. Under all the circumstances he would give judgment for plaintiff for £23 4s. without any costs at all.

Notes and News.

INFLUENCE OF SLEEP ON THE QUANTITY OF CARBONIC ACID EXHALED.—M. de Saint-Martin, in a paper communicated to the Paris Academy of Sciences, shows that natural sleep reduces the quantity of carbonic acid gas exhaled by about one-fifth, but lowers the quantity of oxygen absorbed only by one-tenth. In sleep occasioned by morphine, the proportion of carbonic acid given off sinks to one-half, and during the sleep induced by chloral or chloroform to one-third of its normal value. During the state of insensibility occasioned by the latter agent, if sufficiently prolonged the blood becomes poor in oxygen and is loaded with carbonic acid.

SLAUGHTERING BY ELECTRICITY.—Some experiments have been recently made in St. Petersburg with the idea of slaughtering cattle by electricity, the results of which have been highly satisfactory—death being in all cases instantaneous.

NAPTHOL AS AN ANTISEPTIC.—Dr. Bouchard, writing in the *Comptes Rendus*, recommends naphthol as a powerful and relatively safe antiseptic, especially for internal use.

HORSES IN NEW YORK.—The value of the horses in New York City is said to be £2,400,000. There are 60,000 work horses. The greatest demand is for the draught animal; the smallest per cent. being trotters driven for pleasure. The life of a horse in New York is about four years, so that the city buys 25,000 horses each year. The two classes of horses that sell the best are heavy express horses and coaches or roadsters.

VARIOLA AND VACCINIA.—"At Beshherri (in the Lebanon) I tried vaccination, but I found that the inhabitants were not affected by the operation, the vaccine matter producing no pustules, and I was told that none of them caught the Small-pox, because their cows have sometimes the Cow-pox, the origin of which is caused by the change of climate. The inhabitants of the higher regions pass the winter, together with their cattle, in the plains of Sgorta, not far from Tripoli. Hence I infer that the inhabitants of Beshherri, through being in continual contact with their cattle, as cows, etc., become infected with the disease, and are thus preserved from human contagion."—"Horniberger. Thirty-five Years in the East," p. 13.

AN AGED HORSE.—The *Militaar Zeitung*, of Berlin, records the following exceptional instance of longevity in the horse, which otherwise appears to be well authenticated. After the long war with France at the commencement of the century, the Hanoverian cavalry were left in possession of a certain number of fine English horses, one of which had been drafted as far back as 1793 into the 3rd Hanoverian Dragoon Regiment, which was afterwards attached to the British forces in the Peninsular. The animal in question shared in the campaigns of Spain and Portugal for seven years, and went through the crowning conflict at Waterloo. In 1816 the horse was transferred into the Hussar Guard corps, where it served until 1847. It always remained in good health and perfect condition, and the Hanoverian Government, in the latter year, to recognise its hitherto unparalleled service as a war-horse, ordered it into quiet retirement with every care and attention, until its death in 1850, at the full age of sixty years. It had come scatheless through every fray at which it had been present, and at the action of Gracien-Hernandez (Spain) the animal was the selected remount of Colonel von Arentschild. The officers of the regiment in which the horse had last done duty commemorated its services on a tablet affixed to the wall of the orderly office at Werder, but which disappeared during the forcible incorporation of Hanover with the federation of the German States in 1866.

A HORSE IN SPECTACLES.—A correspondent of the *Manchester Sporting Chronicle*, thinking that his horse was short-sighted, had his eyes examined by an oculist, who certified that the horse had a No. 7 eye and required concave glasses. These were obtained and fitted on to the horse's head. At first the horse was a little surprised, but rapidly showed signs of the keenest pleasure, and he now stands all the morning looking over the half-door of his stable with his spectacles on, gazing around him with an air of sedate enjoyment. When driven his manner is altogether changed from his former timidity; but if pastured without his spectacles on, he hangs about the gate whinnying in a plaintive minor key. If the spectacles are replaced he kicks up his heels and scampers up and down the pasture with delight.

PREVENTION OF HYDROPHOBIA.—Recently, at the Privy Council offices, Viscount Cranbrook, who was accompanied by Lord John Manners, received a deputation consisting principally of members of Parliament, representing divisions of Lancashire, whose object was to ask that the same regulations

with regard to the muzzling of dogs should be enforced in boroughs as existed in other parts of the country. Sir Ughtred K. Shuttleworth, M.P., introduced the deputation, which included Colonel Sandys, M.P., Mr. Robert Leake, M.P., Colonel H. B. H. Blundell, M.P., and others. Sir M. W. Ridley, M.P., was prevented from accompanying the deputation owing to his attendance at the Royal Commission upon Civil Establishments. Sir Ughtred K. Shuttleworth, in introducing the deputation, said that the regulations enforced by the county authorities were not adopted by the borough authorities, and consequently the efforts of the county authorities were defeated. Other speakers advocated that an order should emanate which would apply to the whole of England. Colonel Moorson, the chief constable of Lancashire, cited statistics showing decrease in the disease as the result of muzzling regulations being enforced. Viscount Cranbrook, in reply, said that the subject was not so easy to deal with as some persons imagined. The House of Lords Committee on the subject last year found that there would be some 300,000 dogs exempted from registration, but he thought it quite possible that it might be well to give extended powers for the destruction of stray dogs. He thought that Lord Mount Temple had a Bill before the House of Lords, or was about to introduce a Bill, which might make it unnecessary for the Government to introduce one of the kind. No doubt such regulations as had been enforced had done a great deal of good. In London the disease had been reduced materially, the number of cases had been brought down to units where it had been tens. He could not hold out any hope that the Privy Council would take the responsibility of making a law for the whole country, but, perhaps, the deputation would be satisfied with the assurance that the subject was very strongly before him, and that he was very anxious to assist in getting rid of the disease.

REWARDS TO VETERINARY SURGEONS.—Among the rewards bestowed by the French Academy of Sciences at the annual meeting in December last, three of our colleagues were so honoured. The interest of the Breant Prize (3,000 francs) has been awarded to Professor Galtier, of the Lyons Veterinary School, for his work on Rabies. A Montyon Prize (2,500 francs) was allotted to Professor Nocard, Director of the Alfort Veterinary School, and Veterinary Surgeon Mollereau, of Charenton, for their paper on a Contagious Mammitis of Milch Cows, which already appeared in this journal.

Correspondence.

PURPURA HÆMORRHAGICA, OR ACUTE RHEUMATISM.

SIR,—Mr. Mahon gives what I consider a very good summary of researches on the pathology of Purpura Hæmorrhagica in the horse, in the VETERINARY JOURNAL of December last. I am very much obliged to him for his allusion to a paper by me on the subject, which appeared in your Journal some time ago. He has, however, given me credit for one statement which I actually did not make. He says I saw *one* case of this disease following on Rheumatism. As a matter of fact, in the paper to which Mr. Mahon very kindly alludes, I have described at least three cases seen in this station, and others treated at Saugor. Since my article was written I have come across yet others in my own battery, stationed in Jubbulpore, in all of which symptoms of Purpura were *associated with*, or followed, an attack of acute Rheumatism. How are these cases to be explained? Not as coincidences, I think; for, besides their clinical history to guide us, a knowledge of the organisms present in this disease shows me they are exactly similar to those noted in acute Rheumatism of man. I find principally three kinds of

organisms associated with Purpura in the horse, namely, separate cocci, diplococci, and slender rods. These, in the main, agree in their appearance with similar organisms found associated with cases of acute Rheumatism in man. I, therefore, suggest acute Rheumatism being substituted for Purpura Hæmorrhagica in the horse. Though there is still much difference of opinion regarding the pathology of this affection in the horse, I believe that Purpura Hæmorrhagica is only a manifestation of Rheumatism, and which, I believe, a careful inquiry into its pathology will demonstrate. I would further add that, in cover-glass preparations of blood and serum which I had allowed to stand over for several days, and then examined, I noticed, in addition, the cocci to assume zooglæa masses, and the bacilli or rods appeared in colonies. The organisms stain most readily with methyl-violet.

Moreover, Purpura Hæmorrhagica in man often follows in the wake of acute Rheumatism. The mistake so often made is to suppose that Rheumatism is necessarily accompanied by lameness in animals, or, in other words, that it always implicates the joints; whereas we are familiar with more than one form of Rheumatism in the horse, the same as in that disease seen in man, which require a different explanation.

Jubbulpore, *January 1st*, 1888.

R. W. BURKE, A.V.D.

A. LINE ON "PHARMACY AND THERAPEUTICS."

SIR,—In a recent issue of one of the journals—in yours was it not, sir?—Mr. Burke, A.V.D., lavishly lauding the style and matter of the writer of above, says it is supposed these articles are from the pens of Messrs. Gresswell.

I have honoured myself by reading some of the earlier of these editorials, and though I "have not music" they savoured highly of the style of a Mr. Allman, appropriately referred to by Mr. Leeney, of Brighton, in yours quite recently. Sometimes, we know we are "at fault" in diagnosis, but your readers may rest assured that this is not the case in my fixing the authorship of the "Pharmacy and Therapeutics" of the *Veterinarian*. I beg to be allowed to express my wonder that the pronouncedly discerning powers of Mr. Burke could mistake the grammar, style, and substance of "Pharmacy and Therapeutics" for the careful periods of a literary and scientific gem of the Messrs. Gresswell.

My first and present impressions of these papers, Mr. Editor, suggested the effort of some one with a druggist's (officinal) knowledge of the application of drugs, rather than the production of an educated man possessing an acquaintance with animals, or a subtle and discriminating experience of diseases. How are we to understand the position of an independent technical and scientific journal like the *Veterinarian* yielding up its leaders to a drug-seller to pose as an authority on Therapeutics, pharmaceutical preparations and pharmacists? Has the time arrived when journals are run for the benefit of, and at the dictation of, publishers in the former place of editors?

Undoubtedly journalistic matter of real interest to the profession is scarce, but the eccentricities of these technical leaders of the *Veterinarian* are as inexcusable as is Mr. Burke's admiration of their style, his misinterpretation of their *raison d'être*, and his ascription of their authorship to veterinarians of more than ordinary repute. Errors in grammar and originalities of style are thankfully tolerated in these times of worrying wear and tear; not so technical ambiguities or instances of editorial partiality and of weak-kneed scientific description; much less ought these to be pointed out as models of veterinary writing. Mr. Burke must be very busy, indeed—if not worse than busy—to hold up these "papers" as models of, etc., etc. They really are no better and no worse than the puffs that any druggist—of the facile temperament—must be able to produce by the vulgar acre ere, as an ordinary druggist or seller of

special pharmaceutical productions, he can hope to attract the attention and the custom of the British or other public to the curative virtues of his "celebrated cough cordial," or his "dandelion liver-lifting confection." Text-books by the score supply the diction and phraseology of articles like "Pharmacy and Therapeutics," but not the taste and talent for the unprincipled and unacknowledged application that has escaped the notice and trustfulness of the editors of the *Veterinarian*. At the moment of writing, I can lay hands on but two numbers of this periodical containing these articles. Each contains expressions which cannot have been written by an educated man, and they contain recommendations to use certain drugs in a manner that could not be prescribed by thinking veterinarians. The voice may be to Mr. Burke the voice of Esau; my sometimes careless and always very hasty glance at the "Pharmacy and Therapeutics" of the *Veterinarian* proves to me that that journal lends itself to Allman, and that Allman (editorially) puffs the drugs of Allman.

How has Mr. Burke misinterpreted the transparency? Mr. Burke's complaint of the style of contributors to veterinary journalism may be just or it may be uncharitable. Busy men write little and sometimes that little hurriedly. *Tu quoque*. Mr. B.'s supposition that the "Pharmacy and Therapeutics" of the *Veterinarian* is the performance of scientific veterinarians is not brilliant; his imagination that these "papers" are worthy of imitation reminds us that we are all obtuse at times.

Professional men and specialists, whether busy or not, Mr. Burke ought to know are under no obligation to display themselves as literary characters in their contributions to journals or under other circumstances whatever. This world—professional or lay—ought to be, and in fact is, too thankful to hear from them facts, on any terms, to attempt to snobbishly dictate "style" or commas.

The dignified dulness of mediocrity and the stereotyped phraseology of the writer of "Pharmacy and Therapeutics" may please the smugness of a superficial few in the profession, who, like Mr. Burke, don't know, or who forget that text-books—even the dullest and most incomplete—on "Materia Medica" have used the same terms (though in an honest way, before and ever since the ancient days of Anthony Todd Thompson) that are now being hashed up in the *Veterinarian*, in a manner so insidious as to lead us to imagine that the sleeping editors recommend the daily use of bushels of new, and very new drugs, and of gallons of Allman's mixtures as *necessary* in the medical management of animals, which at present represent cash—a commodity as sacred in these days of sham and æstheticism as were cash and cows in Catulline times. *Auri sacra fames!* JOHN CAMMACK, M.R.C.V.S.

Kimberley, South Africa, December 10th, 1887.

UNPROFESSIONAL ADVERTISING.

Autolycus: Here's another ballad. Of a fish that appeared upon the coast on Wednesday, the four score of April, forty thousand fathoms above water. . . . The ballad is very pitiful and as true.

Dorcas: Is it true too, think you?

Autolycus: Five justices' hands at it; and witnesses more than my pack will hold.
—*Winter's Tale*.

To the Editor of the VETERINARY JOURNAL.

SIR,—It is a compliment indeed to veterinary surgeons in the aggregate, that the profession is respected notwithstanding the determined efforts of the Autolycci to stain its roll-sheet in the gutter. I beg to enclose you the cause of my present wrath, and whilst doing so I cannot refrain from personally commenting on the ghastly production. The enclosed is only one of a series of professional, or rather unprofessional, degradations; some less

bad, some worse; scandals not confined to a village or to a town, but circulating widely, as the perpetrators ensure they shall. Is it wonderful, then, that one should be harping a perpetual apology for the sins of one's brethren? Is it strange that the public, forgetting the bright and recognised aspect of the profession, should sink the "vet" or the "vitynary" in the grovelling "empiric"?

Here is the case of a man having the same qualifications as his co-practitioners, deluding the simple and shocking the wise by his bogus titles and impossible nostrums. And not content with this, in the magnanimity of his soul (I question whether he has one), he must needs propose to dispense veterinary advice gratis!

In the list of his marvellous specifics—and they are many—one struck me as peculiarly funny: he boldly advertises pills for the cure of Hydrophobia! And yet poor Pasteur goes on racking his brains about a bacillus. What's the good of a bacillus if one has these wonderful pills? Again, the incongruous admixture of science and slang, and the sublime confidence in the acquaintance of the public with both. The following are a few quotations: "Mixture Laringitis" (under the head of ointments); "Powders to reduce any Emphisematous Swellings;" "Medicine for Hoose," and "Gripe No. 2, Purging Horses" (literal); "Powders for Yellows," and ditto "to prevent Splenic Apoplexy;" "Cud (?) for cattle;" "Oileates to make stiff joints pliable" (10s. per lb.—extra presumably for the spelling); "Draughts—Stimulating for cases of Chills and Shakes;" "Cure-all;" "Loss of Hair and Itch Oil;" "Powders to act on Optic Nerves, useful in affections of the eye;" "Lotions for wounds and eyes" (?); and so on to the end of four columns.

His pills "for the cure of Fatty Tumours" are a specialité, likewise the draughts "to give wind and staying power to greyhounds when running."

Medicine chests are also on the list, and he sports an "elixir." Finally, he winds up by illustrating his gaudy Price List by portraying, in bliss and contentedness, certain obese cattle and a frolicsome horse, all presumably the grateful recipients of his all-healing drugs.

In conclusion, I must apologise for having ventured to take up so much of your valuable time, but

"I speak as my understanding instructs me,
And as my honesty puts it to utterance."

To your mature judgment I commit the Price List.

FITZ. EASSIE, M.R.C.V.S.

[We are decidedly of opinion that the advertisement sheet issued by Mr. Peter Ellis, of Leeds, is in every way unworthy of a member of the Royal College of Veterinary Surgeons—and is, indeed, very discreditable to the profession. It should be laid before the Council of the Royal College, as that body now has power to prevent such disgrace being inflicted upon us by those who appear to have no consideration for their own or their colleagues' position as professional men.—Ed. V. J.]

"OSSIDINE" AND "OSSOLINE."

SIR,—Those preparations which have lately acquired a transient importance, due principally to their extensive and elaborate advertisement, as certain cures for all diseases of horses' legs, feet, and lameness, generally including (*mirabile dictu!*) side-bones require, I think, at the hands of one of our profession some notice and examination. And this for many reasons, which I will define.

Firstly, because they have been recommended to the members of our

College, as something entirely new and original; secondly, because it frequently happens that a practitioner, in his daily avocations, may be asked by a client who has read a glowing description of their value what his opinion of them is, to what they owe their supposed power, and if they really possess some hitherto unknown efficacy; and again, lastly, and specially, because some members of our craft have unfortunately and, I feel sure at the same time inadvertently, given testimonials as to their value and effect, and admitted thereby that, in their opinion, they regard them as agents hitherto unknown to the profession at large.

This last reason I view as serious, and in a manner degrading, because, naturally, a member of a scientific and enlightened profession should be very chary of giving an offhand opinion of a secret remedy before applying the chemical knowledge he is presumed to possess to ascertain whether the preparation in question contains any previously unknown agent that has been applied to the reduction of exostoses.

Being myself, therefore, somewhat sceptical as to the marvellous action which these remedies claim to possess; and at the same time being wishful, if possible, to elucidate the mystery for our benefit at large, I obtained a supply of each, and submitted them to a careful examination, with the following results.

I found "Ossidine" to be a solution of corrosive sublimate (bichloride of mercury) in spirit of wine, in the proportion of about 1 in 66 of the whole mixture, which had oil of amber and oil of thyme and camphor added to it—by the way, neither a chemical nor mechanical mixture. And "Ossoline" was discovered to be simply a spirituous solution of the same chemical, *e.g.*, bichloride of mercury. I need not say this remedy is "as old as the hills."

But, sir, the moral I would venture to deduce from the foregoing, and what principally led me to address you, is this, that our members should uphold the profession as a scientific and enlightened one, and never demean themselves by advocating mere quackery. We should be very careful and circumspect before giving the weight of our names, as members of the R.C.V.S., to laud the virtues of nostrums which we have not primarily taken the trouble to chemically examine. For, sir, such a practice can never redound to the credit of ourselves in particular, nor to our profession at large.

"FORTIOR."

TRAUMATIC EMPHYSEMA IN DOG.

SIR,—On January 14th we had the dead body of a dog brought to us for examination as to the cause of death. The animal was the property of the Marquis of Abergavenny, and was a deerhound bitch which had been hunting in the afternoon, and after running a buck it was noticed that the size of her body was much increased. There was also a difficulty in breathing, and attempts to vomit. This condition became more acute, and death resulted in about twenty minutes after the first noticeable symptoms. It was an hour after death that we made the examination, and the body was then of an enormous size, and the loose cellular tissue under the tongue was much inflated and protruding from the mouth in the form of a bladder, the tongue itself being its normal size; this swelling pressed the tongue to the roof of the mouth, causing death by Asphyxia. From the above facts it will be seen that the dog died from Traumatic Emphysema, caused by a wound from the buck's horn, and in running the animal literally pumped itself full of air. Believing this case to be an almost unique one, I trust it may prove of interest to some of the numerous readers of your Journal.—JOHN S. GOULD,

Pupil to E. A. Hollingham, M.R.C.V.S.

Tunbridge Wells, Feb. 14th.

DOES A VETERINARY PRACTICE IN A COUNTRY TOWN PAY FOR WORKING?

DEAR SIR,—When our profession is rapidly increasing in members, and our colleges are year by year more and more crammed with students, the above question becomes one of grave and anxious consideration for parents and guardians. Not alone in a monetary point of view, but also as regards the maintenance of that social position to which the profession rightly belongs, and for which you have laboured so long and earnestly, and with some success. Moreover, I believe the veterinary surgeon as he is to-day, educated, and viewing him in the light with which the public have gradually come to regard him, may occupy a fair social standing if he can command money enough to support that standing. For, given a certain amount of respectability, breeding, education, and manners, it is what money will command which must and will do the rest for him. I do not mean being purse-proud, money-ostentatious, lavish in expenditure, or having a large balance at the bankers; but the judicious outlay of such a sum as will cause him at all times to be looked on as a gentleman.

To occupy a good social standing in a country town (if a man is married) it is necessary he should reside in a substantial house, with servants, if not of high class, at least of respectable appearance, capable of doing the work well, and in numbers suited to the size of the house. The furniture and surroundings (in which I will include gardens, horses, and carriages) must also be of that character which will call forth respect, if not admiration; for it must be remembered that my remarks apply to those of us who have to make and keep a position, and not to those born in it, and consequently much easier to maintain. Will the income of a veterinary surgeon relying solely on legitimate practice in a provincial town of even eight or ten thousand inhabitants do this for him? Our practices, pecuniarily, are too often regarded by the public in the same light as that of the sister profession, and it is a common remark that there is a fine opening for a veterinary surgeon here, there, and almost everywhere; for you are told there is only one veterinary surgeon to ever so many doctors. But this is quite a misleading view of the matter, as in a town of the size above-mentioned there will probably be five or six doctors, or about one medical man to fifteen hundred inhabitants; but what about the horses in the town? These will perhaps number two hundred or two hundred and fifty, with a sprinkling of cattle and sheep. This latter class of work—of attending cattle and sheep—is not lucrative; beyond which there is almost certain to be a quack or two to take the bulk of it from you. In the villages also surrounding the town the same state of things prevails, the human population far outstripping that portion of the lower animals which we are usually called on to attend. The consequences are that a good doctor has his surgery full of clients every morning, and when he starts on his round he books nine or ten visits before he returns; and altogether during the day he will probably prescribe for twenty or more patients. The veterinary surgeon's work in the country, on the contrary, is much scattered. He, however, goes far longer distances than the surgeon, but comparatively, owing to the paucity of sick animals, will often go several miles out to his patient and back again without seeing another; or at the most he will only visit two or three on the same round, and if during the day he prescribes for seven or eight he will be doing very well for a country practitioner. Now a veterinary surgeon's charges are no higher than a doctor's, and although he travels far more miles, and in one way and another is always a busy man, yet he does not get more than half the number of fees, and his income is consequently very much smaller. From a perusal of advertisements of practices for sale, and from observation, I conclude that the country

practitioner, as a general rule (I admit there may be exceptions) receives from three to four hundred pounds a year. He books more, no doubt; but these sums are near the mark of what actually comes to hand. With this sum of money he will have to provide and keep two horses, a carriage, and a man to look after them; also other expenses incidental to travelling, and a heavy drug bill. After these items are settled and paid for, how can he keep his domestic arrangements up to the mark, subscribe to the local charities, hounds and pastimes, and conduct himself generally in such a manner as will place him above the level of dentists, architects, a good auctioneer, or a farmer?

And then, again, looking at it from a matrimonial point of view. If you, sir, or the solicitor of the *VETERINARY JOURNAL* consider this part of my communication libellous, I hope you will kindly exercise your right of censorship and leave it out. The ladies generally are sharp in looking out a position for themselves; it is rarely they so far forget as to marry beneath them, at least, not nearly so often as men. Therefore, we are obliged to content ourselves by picking up a well-dressed, respectable, clever, bright lady, even though we should find her at the bar of a hotel. Perfectly honourable, I gladly confess; but, at the same time, not calculated to elevate one in the social sphere.

The competition in country places is also so great, the struggle for professional existence so hard, and it takes such a large number of clients to keep one going, that the country veterinary surgeon of necessity is compelled, no matter how irksome or repugnant it may be to him, to attend cattle markets, horse sales, and shows, and it may be race meetings. He must do this in order to increase and keep his connection. If he has nothing else to rely on but purely professional work, he must get clients and money, if it is but little, somehow; and this is why we see the practitioner making friends with an inferior class of people. He does so to get their work; and he goes in for low fees to cut out his neighbour. Only a short time since a veterinary surgeon offered to do the whole work on one of the largest and best farms in this half of the country for four pounds a year. Another gentleman in the same town immediately offered to do it for three, notwithstanding the fact of the farm, lying a distance of nearly four miles from him. It is this begging of custom as it were, which brings out those remarkable advertisements which you are kind enough to expose in your journal sometimes, and glaring labels on bottles and notepaper. It also gives rise to biassed opinions on the part of one practitioner against the opinion of another. To gain and save money, it is a necessity; he is bound to do it; there is no help for it that I know of. We see veterinary surgeons travelling in third-class railway carriages; they take pupils and assistants into the house as members of the family, a custom relinquished by the best tradesmen. They engage in posting, horse-dealing, taking up manure agencies, etc. Proceedings of this kind are, of course, ruinous to anything like keeping genteel society. I feel certain it is the poverty of the profession which is its bane, and leads to all, or nearly all, its social ills. A short time since you published a letter showing that veterinary surgeons so far forgot the profession as to ride as troopers in Yeomanry Regiments; and the reply was that veterinary surgeons could not afford to become officers. I myself have seen some of the vendors of our drugs and chemicals sit and dine with the members of our profession at some of the best meetings we have ever held. If the work of a veterinary surgeon were at all profitable, would a gentleman of Mr. Banham's position be discussing blacksmiths' shops, and whether one shilling per set of shoes is sufficient remuneration?

As a science, I claim that ours is one of the highest and most interesting, as it is also, in my opinion, the most difficult to master and become proficient

in ; but from the poverty of its practitioners it does not, nor will it ever, equal in standing that of the legal or medical professions ; and from this same cause few men of rank will join it to practise in the provinces.—Apologising for trespassing on your valuable space,

COUNTRY PRACTITIONER.

A DISCLAIMER.

SIR,—I beg to say that the letter headed "The Army Veterinary Department," and signed J. F. Oliver, M.R.C.V.S., London, which appeared in the January number of the *Journal*, is not mine, nor do I know who wrote it. I venture to trouble you with this, as I have received communications attributing it to me.

G. A. A. OLIVER, A.V.D.

The usual quarterly meeting of the Lancashire Veterinary Medical Association will be held at the Blackfriars Hotel, Manchester, on Wednesday, March 14th, when Mr. Tedbar Hopkin, F.R.C.V.S., will read a paper on "Roaring." Tea at 5 p.m.; business at 6.

ARTHUR LEATHER, *Hon. Sec.*

ANSWERS TO CORRESPONDENTS.

A. L. S.—1. The disease is not the same as Anthrax, being due to a different kind of bacillus, and manifesting itself, clinically, in a different fashion. It is now usually known as Symptomatic Anthrax. 2. We believe it is not included with Anthrax in the Contagious Diseases (Animals) Act.

READER.—The details of the change will be given in the new Register of the R.C.V.S.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from F. Duck and F. Smith, A.V.D., Aldershot; J. Cammack, Kimberley, South Africa; R. W. Burke, A.V.D., Jubbulpore; J. Donaldson, Potrie, Paisley; R. Shenton, Belper; F. L. Gooch, Stamford; J. Armstrong, Penrith; F. P. Eassie, York; A. M. Creighton, Lisburne; J. G. Rutherford, Manitoba; J. F. Winchester, Boston, U.S.A.; "Fortior"; A. Leather, Liverpool; T. Greaves, Manchester; A. Robinson, Greenock; J. S. Gould, Tunbridge Wells; A. E. Macgillivray, Banff; Sir F. Fitzwygram, Havant; F. Raymond, A.V.D., Woolwich; E. W. Hoare, Cork; Messrs. Arnold and Sons, London; Professor Limont, Glasgow; W. Penhale, Barnstaple; "Country Practitioner"; G. A. A. Oliver, A.V.D., Woolwich; A. L. S.; "Reader"; A. W. Hill, London; H. F. Greenhalgh, Leeds; S. Villar, Harrow, London; J. Matthews, Edinburgh.

BOOKS AND PAMPHLETS: *A. C. Cope* and *Victor Horsley*, Reports on the Outbreak of Rabies among Deer; *J. J. Lupton*, The Recent Outbreak of Rabies among the Deer in Richmond Park; *Bulletin et Memoires de la Société Centrale de Médecine Vétérinaire*; Annual Report of the Massachusetts Cattle Commissioners for 1887; *Recueil des Memoires et Observations sur l'Hygiène et la Médecine Vétérinaires Militaires*; Report of the United States Commissioner of Agriculture for 1886; *Sir James Paget*, The Morton Lecture on Cancer and Cancerous Diseases; *E. Dele*, Exportation de Betail de la Belgique; *Ed. Dele*, La Pleuropneumonie à Borgerhout.

JOURNALS, ETC.: *Journal of the National Agricultural Society of Victoria*; *Revue Vétérinaire*; *Lancet*; *Recueil de Méd. Vétérinaire*; *Hufschmied*; *Journal de Médecine Vétérinaire*; *American Veterinary Review*; *American Live Stock Journal*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Repertorium für Thierheilkunde*; *Live Stock Journal*; *Mark Lane Express*; *Echo Vétérinaire*; *Edinburgh Medical Journal*; *British Medical Journal*; *London Medical Record*.

NEWSPAPERS: *Cheshire Chronicle*; *Cheshire Observer*; *Brooklyn Daily Eagle*; *Woodstock Weekly Sentinel-Review*; *Baltimore Weekly Sun*; *Baltimore Sun*; *Cambridge Chronicle and University Journal*; *Middlesex and Surrey Express*; *Limerick Chronicle*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

APRIL, 1888.

PREVENTIVE INOCULATION FOR CONTAGIOUS PLEURO-PNEUMONIA.

BY PROFESSOR PEUCH, VETERINARY SCHOOL, TOULOUSE, FRANCE.

AMONG the questions which relate to the subject of preventive inoculation for Contagious Pleuro-pneumonia, there are two which deserve especial attention, on account of the controversies which have been carried on respecting them—namely, the transmission of Pleuro-pneumonia and the indications for inoculation.

(1) *Is Pleuro-pneumonia transmitted by Inoculation?*—The importance of this question is evident—in fact, if inoculation created the contagious centres as, for example, Sheep-pox does, that would greatly limit the indications for it.

Now, the data which we possess on this subject do not agree. Thus, as early as 1857, at the twelfth Netherland's Congress of Rural Economy, held at Deventer, it was declared that inoculated animals could not transmit Pleuro-pneumonia to other animals placed in contact with them. M. Jennes, of Utrecht, inoculated half the animals in a stable without any injurious effect to the other animals. On the contrary, M. Reynal declares that a Breton heifer which he inoculated communicated Pleuro-pneumonia to two others which were placed on each side of it, characteristic lesions of that disease being discovered at a *post-mortem* examination.* But this fact has not the force the author attributes to it, because it was not proved that the heifers had not received the germs of the disease before the experiment.†

M. Mollerau, after relating a fact tending to demonstrate that cows not inoculated may safely remain in a stable with inoculated

* "Traité de la Police Sanitaire des Animaux."

† "Recueil de Méd. Vétérinaire," 1879, p. 913. [At the International Veterinary Congress, held at Brussels in 1883, M. Bouley stated that M. Reynal had made a mistake in this case.—ED. V. J.]

animals, even when the operation is followed by terrible gangrenous swelling, mentions another, which proved that, after eighteen days, inoculation transmitted Pleuro-pneumonia to a cow bought in the Canton of Schwitz, where, it is said, the disease is unknown; and he concludes from this that inoculation, although very rarely (about one case in a thousand), may give Pleuro-pneumonia to animals which are exposed to it.*

Chieus de Roubais inoculated, under various conditions, only a portion of the animals kept in a stable, without at any time observing any morbid symptoms among those the proprietor exempted from this precautionary measure.

M. Degive noted in his report on Pleuro-pneumonia, read before the International Congress at Brussels in 1883, a case in which an animal, inoculated by intra-venous injection, showed the interstitial lesions—*i.e.*, the marbled hepatisation peculiar to the disease; and M. Willems asserted that inoculation transmits the malady, but that inoculated animals cannot communicate it to others in contact with them.

Nevertheless, M. Cagny mentioned at the same assembly a fact tending to prove that Pleuro-pneumonia may be transmitted by an inoculated animal, especially if on pastures where animals not inoculated lick those which are, or eat the grass from those places where the ends of the tail have fallen, etc. But M. Lydtin observed that this was not conclusive, unless proved by an autopsy of the inoculated animal.

After this observation M. Cagny said that a *post-mortem* inspection had taken place; that he had been assured that the lungs were perfectly healthy; but as he had not made the examination himself, he acknowledges that this fact could only have a relative value.

These divergent statements gave rise to the experiments which were made in 1884 and 1885 at Pouilly-le-Fort (Seine et Marne), under the auspices of the Societies of Agriculture of Melun and Veterinary Medicine of Paris, by M. Rossignol, veterinary surgeon at Melun. They were made on twenty cows placed in one stable; ten were inoculated and distributed among ten not inoculated. The effects of inoculation were very evident; and even in the experiments made in 1885 a second inoculation was made to prove the first had been really protective. About four months after, the experiments were completed by killing the cows at the Melun abattoir; the autopsies were made with the greatest care by M. Rossignol and his colleagues, but no signs of the disease were discovered in the carcasses of either the inoculated or uninoculated

* "Recueil de Méd. Vétérinaire," 1880, p. 435.

animals; the lungs and pleuræ were, for the most part, absolutely healthy. Tubercular lesions were found in two and echinococcus in one. "This experimental demonstration, repeated twice with the same results, must be considered conclusive, and they ought entirely to dissipate the suspicion of there being any danger of the transmission of Pleuro-pneumonia by inoculated animals" (Rossignol).

In these experiments several of the cows, both inoculated and used as test animals, having calved, their calves were diversely inoculated, and the results tended to establish the fact that immunity is transmitted to the fœtus; "while the criterium inoculations made behind the shoulder—that is, in a dangerous and therefore forbidden part—may produce pulmonary lesions." This conclusion is based on the lesions observed at the autopsy of a calf from a cow which had been inoculated fifteen days before calving, the calf having been inoculated as a test by subcutaneous injection of the virus behind the right shoulder. Rossignol states that they discovered "the existence of purulent Pleurisy on the right side, with thick and very adherent false membranes; the left pleura and lung were intact, but anterior lobe of the right lung was intensely congested, though not friable; and in its tissue there was not that interlobular infiltration usually observed in Pleuro-pneumonia." It will be seen from this description that the conclusion alluded to above is not quite borne out.

M. Rossignol continued his observations and experiments with the virus of Pleuro-pneumonia subjected to different degrees of drying, and he observed on making the autopsy of a cow inoculated with virus dried at 85° Cent., afterward submitted to test inoculation in each flank (hypochondriac region), with pulmonary serosity, and which was sacrificed at the end of two months, that at the base of the right lung, on the external border, there was a lesion apparently chronic, about the size of a hen's egg, "which did not appear to him to have any connection with Pleuro-pneumonia." However, after microscopic examination of the piece of lung by M. Mégnin, M. Rossignol acknowledged the possibility of the transmission of the disease by inoculation, although the majority of veterinarians still considered it doubtful. This precise conclusion rests, however, upon microscopic investigation, which is nothing less than demonstrative, especially when it relates to a pulmonary lesion which a skilful practitioner like M. Rossignol, who was accustomed to the disease, considered could not proceed from that malady. Strictly speaking, it may be admitted that complications of Peritonitis, Pleuritis, Endocarditis, and sometimes of Arthritis, which supervened in all those cases when death resulted from inoculation in the flank, indicate the development of Pleuro-

pneumonia, considering that in the natural evolution of this malady these complications are sometimes met with. But it is necessary to remark that in these cases—the development of the malady from natural contagion—the pulmonary lesions are never absent. These differences may be explained by saying, that in inoculated Pleuro-pneumonia the inflammatory processes which anatomically characterise this malady occur in the tissues of the inoculated region—usually the tail; while in Pleuro-pneumonia by natural contagion, the infection is received by the respiratory tract, and consequently the lungs are first attacked (H. Bouley). This is an ingenious theory, but it requires the sanction of experiment, for except in the case mentioned by M. Bouley in his discourse to the Academy of Médecine in 1881, which tended to demonstrate the direct transmission of Pleuro-pneumonia by breathing the air, we know of no other proving this mode of contagion. It rests, then, only upon an induction which now has many experimental researches against it, proving that air expired does not contain any germs, and hence no conclusions ought to be drawn from it. And again, is it not clear that in affirming that inoculation produces Pleuro-pneumonia, it is not explained why inoculated animals do not transmit this malady, as is positively proved by the experiments of Jennes in Holland and M. Rossignol at Pouilly-le-Fort? But let there be no misunderstanding about the bearing of this, for we do not wish to say that inoculation of Pleuro-pneumonic serosity does not determine the specific effects which confer immunity on the subjects which are the objects of them. We would not compare the action of this operation with that of a revulsive, or of any septic matter whatever, or even again to an anatomical puncture, as has been done (Boens). Pleuro-pneumonia inoculation generally renders animals invulnerable to contagion, as is satisfactorily proved by numberless observations and experiments on this point in France and in other countries. And in achieving this, this operation does not create contagious centres: it is a real vaccination. This is what experience teaches, and we may add that this fact is in nowise contrary or at variance with what is known about preventive inoculation, notably with that which ordinary observation has taught respecting the preservation of man from Small-pox by vaccination. There is no instance recorded of Variola engendered by vaccination; nevertheless it is unquestionable that this virus preserves from Small-pox. Its action, like that of Pleuro-pneumonic serosity, is truly specific and preventive, whatever may be the opinion entertained regarding the vaccine virus, whether considered as attenuated Variola, or as that which appears more probable—a distinct malady, the benefits of which

were revealed by the observing genius of Jenner. In the same way "there does not exist a single fact in which Pleuro-pneumonic inoculation has been the point from which the smallest epizooty has spread" (Butel).

These premises being established, the study of the indications for preventive inoculation naturally follows.

(2) *Indications*.—Preventive inoculation for Pleuro-pneumonia is practised sometimes on healthy animals, "free from all prior contamination" (Butel); sometimes upon suspected animals—that is to say, on those which have been in a stable with sick animals or in contact with such in a pasture, or exposed to contagion in any of the numerous ways by which it can be conveyed. Hence arises the division of this protective operation, as in all similar ones, into Preventive Inoculation and Necessary Inoculation. This distinction, which is fundamental for all preventive inoculations, is here of very great importance, because of the various effects of Pleuro-pneumonic inoculation, according to the cases in which it is employed, and which have given rise to numberless controversies about the efficacy of this practice.

I. INOCULATION FOR PREVENTION.—It is thus called because used to prevent the appearance of Pleuro-pneumonia in a stable or pasture.

It is indicated in places where a great many cattle are imported, and in which Pleuro-pneumonia permanently prevails. Such is the case, for example, in Holland, where, in the localities of the distilleries, cattle are fattened from all provinces, and are constantly being renewed. On this subject M. Sanson remarks that "the veterinary surgeons in Holland, like those in other countries, discuss the advantages and disadvantages of inoculation; but the feeders themselves do not discuss it, and content themselves with knowing that without inoculation their business would be impossible."* It is the same in the North of France, "where inoculation is considered the safeguard of the industry which consists in fattening cattle upon the residue of the distilleries" (H. Bouley).†

When there exist centres of infection in the neighbourhood of dairies in large towns, preventive inoculation is indicated; the proprietor may have recourse to it at his own peril and risk. It is then a *voluntary* operation carried on at the risk and expense of the interested person, and not of the State. But it may be *obligatory* for all bovine animals in a country; for example, in the Southern Provinces of Holland—the Spoeling districts (distillery

* "Bulletin et Memoires de la Société centrale de Médecine Vétérinaire," 1883, p. 149.

† "Recueil de Médecine Vétérinaire," 1881, p. 203.

districts), where the law of August 26, 1873, which granted an indemnity equal to the value of the healthy animal if it died from inoculation, has been in force since 1878. On this subject M. Wirtz, director of the Veterinary School at Utrecht, communicated the following information to the Congress at Brussels:—"During the period of five years, from 1878 to 1882, in the Spoeling district, 128,308 animals were inoculated—that is to say, 22,000 to 35,000 each year. The losses resulting from inoculation were 0·32 to 1·29 per cent. each year; the total loss 0·90 per cent. These figures are exact; they are based on the declarations of the proprietors, who had every interest in claiming the indemnity." If these figures are compared with those of the mortality of the uninoculated, 26·10 per cent. (Degive), the advantages of precautionary inoculation are clearly seen.

Besides, an experiment was lately made in the Commune of Borgerhout (Belgium), in order to exemplify the value of precautionary inoculation. Pleuro-pneumonia prevailed in this commune for a long time, and a royal decree dated August 23rd, 1885, authorised this experiment, stipulating that an indemnity of 3-4ths of the value of the animals which perished from the effects of inoculation should be given to the proprietor. This decree fixed the maximum indemnity at 450 francs, "and from September 12th, 1885, to March 4th, 1886,"* 414 bovine animals, certified healthy, were inoculated under the care of M. Dèle, of Antwerp. "Four succumbed as a result of the inoculation, and two of them, inoculated September 18th, and October 17th, 1885, were killed on account of having contagious Pleuro-pneumonia.† The final result of this trial, says M. Rossignol, was the disappearance of Pleuro-pneumonia from those stables where inoculation had been carried out.‡

In France, preventive inoculation is entirely optional, and the occasions on which it may be practised, as well as the risks, are left to the judgment and care of those interested. There is, however, a tendency to admit that it may be necessary to make it obligatory in those places where the disease is permanent, as in some of the frontier departments of the Basses-Pyrénées. But it is a very delicate question, and requires most careful examination; we have no intention to discuss it at present.

II. NECESSARY INOCULATION.—This is resorted to when Pleuro-pneumonia exists in a stable or pasturage, the object being the arrest of the disease.

* "Bulletin du Comité consultatif de Belgique," par M. Wehenkel.

† Ibid.

‡ "Bulletin de la Société de Médecine Vétérinaire pratique. Séance du 11 Mai," p. 82.

It is ordered by Article 9 of the law passed July 24th, 1881, and it applies to all bovine animals which were in the same stable or pasture with the diseased animals.

This operation, then, is, as we see, limited to suspected animals, which, having been exposed to infection, may be contaminated. And if inoculation causes the death of an animal, the proprietor is awarded an indemnity equal to its entire value (Article 17 of the law of 1881). But according to the statistics communicated by Professor Degive, at the Congress of Brussels, the mortality produced by inoculation practised on animals placed in the midst of infection is from 2·71 per cent. That it may be less is shown by the statistics of M. Delamotte, who had only forty deaths in consequence of inoculation in 1,354 animals, which is less than 1 per cent. It is needful to remark that inoculation is likely to cause various accidents, and that it is not always preventive, if the disease already exists in a latent manner in animals at the time when they undergo the operation. Then inoculation seems to accelerate the evolution of the malady, and "so certainly, so surely, that three, four, or five animals affected in a latent manner when inoculated, become ill in thirty or forty days afterwards" (Butel). Therefore, to ensure the success of this necessary inoculation, the veterinary surgeon should be called in at the commencement, and he should diagnose the existence of Pleuro-pneumonia at a glance. Then the sick animal being instantly killed, and inoculation immediately practised, the malady is arrested, "as by the wave of a magic wand" (Butel). However, M. Butel does not infer that this magnificent success is entirely due to the action of inoculation; for, on reflection, he says, "it is easy to see that all these animals were perfectly healthy" at the time of the operation, "because not one of them became ill." Then adds our colleague: "After having killed the first cow, if instead of inoculating, nothing had been done, the result might have been the same, since the slaughter of the animal destroyed the contagious principle, which could alone propagate the malady among the others; preservation of these then proceeds exclusively from the destruction of the diseased beast." But as it is impossible to know positively whether the suspected animals, which may have every appearance of health, "may not conceal the germs of the disease, it is necessary to place them without delay under the shield of Willems (that is to say, resort to necessary inoculation), which in the midst of contagion will preserve them from all danger" (Butel).

This procedure is authorised by Article 9 of the law of July 21st, 1881, which ordains that the mayor ought to order the slaughter of all sick animals, "and the inoculation of all bovine stock in the localities known to be infected by this malady." And

by this expression "localities known to be infected" must be understood, according to the ministerial circular of August 20th, 1882, those which the prefectorial decree making the declaration of infection shall determine the boundaries: it is then only within this boundary that bovine inoculation is prescribed. Thus, for example, if stables belong to several persons and have one common yard, and Pleuro-pneumonia breaks out in one stable, all are declared to be infected. In the same way, if Pleuro-pneumonia is discovered in one animal in a pasture, the declaration of infection will apply to all the animals in that pasture. The inoculation ordered by Article 9 of the law will only be required in districts declared to be infected, as has just been observed (circular alluded to).

As to the delay in the execution of this measure, it ought to be as brief as possible, according to the ministerial circulars of August 20th, 1882, and June 18th, 1883.

Such are the regulations of the sanitary legislation in France, relative to the indications for the carrying out of compulsory inoculation. But it must be observed that at the fourth international Congress of Veterinary Surgeons, held at Brussels in September, 1883, where were assembled practitioners from different countries of Europe in which Pleuro-pneumonia had raged, it was decided that compulsory inoculation ought to be allowed. And on this subject M. Bouley even remarked "that a certain latitude of judgment respecting the adoption of inoculation ought to be left to those on the spot." We have come to this conclusion in our "*Précis de Police Sanitaire*"; for it appears to us conformable to the spirit of the law of July 21st, 1881, by which the Legislature sought to suppress contagious diseases by relying "on an enlightened and zealous staff to inform the administrative authorities as to the best means for dealing with them";* and besides, the controversies of which inoculation is still the subject, imply, in our opinion, a certain degree of prudence and reserve, in order that the measures should not appear vexatious, but, above all, that they should not expose the public Treasury to grave and heavy charges.

However, the Veterinary Sanitary Congress held in Paris in 1885, decided that the veterinary authority ought to order that all animals attacked with Pleuro-pneumonia should be slaughtered without delay, and those likely to have been infected inoculated. This conclusion seems to have resulted from a passage in M. Butel's report tending to establish the fact that the inoculation of infected animals "has only a slight efficacy, inversely proportionate to the

* "*Rapport du Député Mouquet.*"

number of animals attacked in a latent form at the time it is resorted to."

This passage recommending hasty inoculation was criticised by M. C. Leblanc, who set against it the facts noted in his practice in the Department of the Seine. It was thus that in 1882, in fourteen stables, and in 1883 in twenty-three, M. Leblanc saw reason to expect a second case of Pleuro-pneumonia for inoculation; this second case, however, did not occur. There are then, says our colleague, in two years, thirty-seven stables in which inoculation should have had a favourable and startling effect. Evidently these results cannot be overlooked; they merit serious attention. We may mention that we had them in our mind during a mission which was entrusted to us by the Minister of Agriculture, to one of the Departments du Midi, where this malady was reported in 1887.

It is necessary, then, to exercise judgment in these cases of compulsory inoculation, and when the number of the suspected animals is small, three or four, for example, it is advisable to counsel their sale to the butcher, especially in dairies when the public knows of the existence of the malady, as is certain to be the case in small towns. But it must be otherwise if Pleuro-pneumonia breaks out in a large stable of milch cows which cannot be sold to the butcher. In this case, conformably to Article 9 of the law of July 21st, 1881, inoculation ought to be resorted to, if it is certain that the disease is really present.

However, it must not be forgotten that inoculation is not obligatory in Algeria. The decree of November 12th, 1887, relating to the observance of the law of July 21st, 1881, does not insist on this measure. Although the stables in that country generally contain a smaller number of animals than those of the metropolis, every one will agree that if the central administration considered inoculation to have the almost absolute efficacy attributed to it, it would have been made compulsory there as it is in France. May we not conclude that the Colonies, enlightened by the experience of the effects of compulsory inoculation during five years (1882-1887), may be safely left to take care of their own cattle. This is at least our opinion.

ON THE ACTION OF PHYSOSTIGMINE ON THE HORSE.

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Physostigmine.

THIS drug is described by Lauder Brunton as derived from the *Physostigma venenosum*, or Calabar bean, obtained from Western Africa. The bean contains two alkaloids, one known as Eserine,

or Physostigmine, and the other Calabarine. These alkaloids possess different properties: physostigmine contracts the pupil when applied locally to the eye, causes contraction of voluntary and involuntary muscle, and in large doses produces paralysis of respiration, whilst Calabarine produces symptoms of Tetanus, closely allied to those occasioned by strychnine.

Hence we see the necessity, in using a drug of this sort, to work entirely with the pure article. In this respect we have been favoured with absolutely pure specimens of Eserine by Messrs. Burroughs, Wellcome and Co., Snow Hill Buildings, London, and to this firm our best thanks are due for having courteously supplied us not only with this drug, but many others which we have attempted to determine the action of.

It will be remembered that Dieckerhoff, of Berlin, was the first to introduce this drug into veterinary practice. It has been tried by many English practitioners with varying success, and one object of this communication is to attempt to settle its actual therapeutical value, dose, and best mode of administration. In this matter we have been materially assisted by one or two articles published in current veterinary literature by British veterinary surgeons.

The *Preparations* of Eserine which we have used are the sulphate, salicylate, and the latter combined with pilocarpine. The sulphate appeared to produce more colicky pain than the salicylate; whilst the latter, combined with pilocarpine, was found, as shall be shown later on, to be not only more efficient when combined with this drug, but also that a smaller dose was required. This we regard as a rather important and new fact, and one of some practical value.

Dose.—The dose must depend upon the size of the animal, but we may regard one and a half grains of the salicylate as a dose for a medium-sized horse, whilst two grains will probably meet most requirements; both these quantities are effective in their respective cases if combined with three grains of pilocarpine. Smaller doses, such as one grain of Eserine, will in the majority of cases prove useless. We lay particular stress upon this point, as we think it may offer an explanation of the disappointing results obtained by some practitioners.

The *mode of administration* employed by us was hypodermically and intra-tracheal. Of the two, we unhesitatingly prefer the intra-tracheal method to the hypodermic, for the reason that the drug acts more quickly, and in some cases even a smaller dose is required. It is not possible to absolutely state the difference between the doses which should be used hypodermically and intra-tracheal; but we found in one case that one grain of the

drug introduced by the trachea, combined with pilocarpine, had a much greater action than one and a half grain administered hypodermically. It is probable, however, that in the general run of practice no important difference need be made in the dose administered by the trachea and by the skin.

The advantages of intra-tracheal injections are :—(1) It causes less pain than when injected below the skin ; (2) it is more rapidly absorbed ; (3) it acts quicker ; and (4) there is less chance of loss, provided the head be held up for two or three minutes after injection, so as to prevent the fluid dribbling back through the nostrils, which will occur if the head is allowed to become dependent. The amount of fluid which may thus be injected into the trachea is very considerable, and occasions the patient no inconvenience whatever. As the Eserine tabloids are soluble with difficulty in water, this is of great advantage, for we need not hesitate to inject six to eight drachms of fluid, whereas this quantity placed under the skin can only be introduced with difficulty and occasions loss. It is right, however, to say that one or two patients have, on the introduction of the drug into the trachea, coughed slightly. This need occasion no alarm whatever, the only care to be taken being to keep the head up to prevent the drug dribbling back. In one or two cases we have noticed slight trickling of blood from the nostrils immediately after the operation ; this is quite harmless, indicates no damage, and no notice need be taken of it.

We have stated that the drug is soluble with difficulty in water. Its solubility is increased by using warm water, the small tabloid being placed in a two-ounce ointment pot or other suitable vessel, a little water added, the tabloid crushed with a glass rod or penholder, and more water being added, with continuous stirring, until the whole is dissolved. If after this some small particles are still seen undissolved, no notice need be taken of them, provided the needle of the syringe is large enough to allow them to pass, for they will be readily absorbed by the bronchial mucous membrane. The tabloids are soluble in spirit, but the fluid is rendered gelatinous, and we have not employed this method lest the gelatinising should impair its action. The solution in water has a rather pleasant smell and a slightly pale pink tint.

Therapeutic Action.—When the drug is introduced beneath the skin, we may expect it to act in about forty or sixty minutes. When introduced into the trachea, its action may commence in twenty to twenty-five minutes. It is rarely delayed beyond an hour ; whilst beneath the skin we have known it to remain an hour and a half before exhibiting its action.

We will first describe the action of Eserine by itself,

and then the physiological conditions induced by pilocarpine.

The earliest indications we have of the action of the drug are loud intestinal murmurs, passage of flatus, with slight colicky pain; shortly this is followed by evacuation of the contents of the rectum, and the motions then pass at intervals of a few minutes, each becoming gradually softer, more watery, less formed in balls, until we reach the stage when the evacuations are moist and fluid, exactly representing cows' fæces. All this time the abdominal disturbance has become greater, the animal lies down, but seldom rolls, the intestinal murmurs are louder, the passage of flatus almost continuous, straining marked, fæces are voided with great rapidity, often ejected with force, and several ounces of a brown-coloured fluid will at this time accompany each motion. About two to two and a half hours from the time of injection, the effects are commencing to pass off, and during this short time an almost incredible amount of fæces will have been excreted. Details on this point will be given below. Those who have had no previous experience of the drug and the results obtained, will regard it as magical and marvellous.

We may at once state that in Eserine we believe we possess a drug of the very highest value in the treatment of intestinal obstruction and its accompaniments. When we consider the long period which must elapse before those drugs used as purgatives in general practice can possibly act, and that every hour which passes before a free action of the bowels can be obtained is an element of extreme danger, we must, we think, hail with delight a drug which in an hour or so will give us the same results which are at present only procured in from sixteen to twenty-four hours.

We have previously stated that pilocarpine increases the action of Eserine. The results obtained with pilocarpine alone will be detailed in a future paper, but the symptoms it produces when used with Eserine, in addition to those above named, are salivation of more or less intensity, and increased intestinal peristalsis with no increased pain. Salivation is sometimes extreme, and usually commences between three and five minutes after injection; the secretion pours from the mouth, the horse is constantly slobbering and moving the tongue, and large quantities of saliva are swallowed. Salivation need not cause the slightest alarm, it is the natural consequence of using pilocarpine; the quantity of saliva swallowed, and the stimulation of the pancreatic secretion, may in the intestinal canal act most usefully, both mechanically and chemically. It is important to note that Eserine may be administered, even after other purgatives have been given, without destroying or increasing the action of either.

The action of Eserine on the intestinal canal of the horse is due (1) to an increased peristaltic action caused by the influence of the drug on involuntary muscular fibre ; and (2) to an increase in the fluids secreted from the mucous membrane of the intestines. We are led to believe that the large bowels are those which are most acted upon by the drug.

We need not, we think, point out to the practitioner the class of case in which this drug should prove of value, but we may be permitted to suggest that, even where volvulus of the intestine is suspected to exist, some good, and certainly no harm, may follow from its use. So violent is the peristalsis produced, that in a simple form of twist we see no reason why reduction may not be effected.

We have not observed the profuse perspiration produced by Eserine, such as has been recorded by other British veterinary writers.

In concluding these notes on Eserine, we append some observations obtained from its practical use which will pretty clearly demonstrate the value of the drug.

A horse received $1\frac{1}{2}$ grains of Eserine subcutaneously ; it acted in twenty-five minutes, and produced in the first hour seven evacuations, in the second hour seven, the effect passing off in two hours and ten minutes.

A horse received $1\frac{1}{2}$ grains of Eserine hypodermically, which took twelve minutes to act, producing seven evacuations in the first hour, and then terminating.

Another horse received $1\frac{1}{2}$ grains of salicylate of Eserine hypodermically, producing a free action of the bowels in one hour. This case terminated fatally from Ruptured Stomach, and thus it was demonstrated that Eserine could act upon the large intestines, in spite of the shock to the abdominal nervous system which a Ruptured Stomach causes.

A pony received 1 grain of Eserine hypodermically ; three evacuations were produced in fifty minutes, and in eighty minutes from the time of injection eight evacuations had occurred. The case was a fatal one, the cause of obstruction being due to a small diaphragmatic hernia ; had the gut not been nipped so tightly, there is reason to believe the increased peristalsis might have withdrawn it.

A horse received a few drops of a solution of Eserine into the conjunctival sac ; it shortly produced contraction of the pupil, which lasted fully two days.

A horse received $1\frac{1}{2}$ grains of Eserine by injection into the trachea ; it took seventeen minutes to act, and produced in the first hour twelve evacuations, weighing 11 lbs. 13 ozs., and a considerable quantity of flatus. The action then passed off.

A horse received 1 grain of Eserine hypodermically ; it took

forty-two minutes to act, and produced only one evacuation in one hour, accompanied by a considerable quantity of flatus.

The same horse received 1 grain of Eserine and 3 grains of pilocarpine by injection into the trachea; it took twenty-one minutes to act. In the first hour, counting from time of injection, it produced fourteen evacuations, weighing 30 lbs. 6 ozs.; in the second hour four evacuations, weighing 7 lbs. 6½ ozs.; and in the third hour two evacuations, weighing 2 lb. 13½ oz.; in three hours a total of 40 lb. 10 oz. of ingesta.

In comparing these two cases, the value of pilocarpine in addition to Eserine is clearly demonstrated.

A horse received 1½ grains of Eserine by the trachea; it acted in forty-one minutes, and produced in the hour five evacuations, during the second hour four evacuations. The weight was unfortunately not obtained, but the quantity of ingesta completely filled a stable bucket. The case was one of most obstinate Constipation, and had received 6 drachms of aloes previously, which ultimately acted at the expiration of the usual time.

Another horse received 1 grain of Eserine with 3 grains of pilocarpine by the trachea, which acted in one and a half hours, producing in two hours and a half from time of injection eight evacuations, weighing 26 lbs., exclusive of loss. The pilocarpine produced its salivating effect in four minutes from the time of injection.

A horse received by the trachea 2 grains of Eserine and 3 grains of pilocarpine, the case being an exceptional one of Intestinal Obstruction. The drug acted in twenty minutes, there being twenty-one evacuations in one and a half hours, which were accompanied by the most intense straining we have ever yet witnessed from Eserine. The relief to the intestinal pain was considerable, and in a short time it entirely ceased. The case terminated fatally a fortnight later, when a disorganised condition of intestine was discovered, such as no drug could ever have beneficially effected.

We have made but few observations on the influence of Eserine on the pulse, respiration, and temperature. We believe we have observed the pulse become fuller under its use. The respirations are generally increased, but this, of course, is due to the amount of abdominal disturbance present; in one case the temperature fell after the evacuation of the bowels; but our observations on all these points are imperfect.

THE RELATIVE THERAPEUTIC VALUE OF SOME ANÆSTHETICS.

BY JAMES MATTHEWS, STUDENT, ROYAL VETERINARY COLLEGE,
EDINBURGH.

THE desire to obtain, by the veterinary profession at large, the recognition of the paramountly effectual and safe action of certain anæsthetics as yet almost unknown by, or perhaps I should say, unused by its members, has induced me to lay the following remarks before the readers of the VETERINARY JOURNAL.

While proceeding somewhat arbitrarily, and treating the subject under the two heads of the pharmacology and therapeutics of anæsthetics, I shall premise a few remarks, not altogether inappropriate on this occasion. It must be remembered that although Edinburgh may feel justly proud that it was Simpson who, in 1847, first utilised chloroform in the alleviation of human suffering, it was only very long afterwards, much to the disadvantage, not to say discredit of our art, the disparagement of her sons, and the embarrassment of real progress of veterinary surgery, that a corresponding advance was made in our profession.

This delay is to be accounted for by the insane divorce, against which I would most emphatically protest, which was so long maintained between medical and veterinary science, much to their mutual injury and retarded advancement.

The science and art of medicine and the veterinary science and art are united in one common bond; they are founded on the same basis, the institutes of medicine, branches of the same stem, the physiological; and sprung from the same great trunk, the biological or science of life.

The various agents employed to induce a state of anæsthesia may be conveniently considered as (a) Local and (b) General, according as their action is confined to a limited area, annihilating sensation in peripheral nerves, or as it becomes general, attacking the great nerve centres, and thus abolishing sensation throughout the body.

(a) *Local Anæsthetics* are few, and may be comprised as extreme cold, ice, ether spray, carbolic acid, cocaine, and iodoform.

Each of these suspends sensibility in virtue of a direct sedative action on the nerves themselves, and I would more particularly direct attention to the puissant utility of carbolic acid and iodoform as local anæsthetics, which I consider deserve more extensive application in veterinary surgery. The simple painting on of pure carbolic acid, for example, in the case of opening an abscess, would not only anæsthetize but aseptisize, and this would be of especial advantage in evacuating matter near contaminating centres, as the anus, etc. The value of powdered iodoform as a local

anæsthetic is very great indeed in the relief of pain in irritable ulcers and sores, and the simplicity of its application, the invariable comfort obtained, along with its excellence as an antiseptic and deodorant, warrant for it a much more extensive employment. I therefore venture to advocate the use of powdered iodoform as a local anæsthetic to all painful discharging surfaces ; and, moreover, its value is much enhanced, as it is a stimulant, rapidly inducing healthy action in indolent wounds. Of late cocaine has found favour in the eyes of a number of practitioners, but my experience is that it is uncertain in its action.

(b) *General Anæsthetics*.—General anæsthetics, however, are very numerous, and Dr. Ward Richardson, in a recent synopsis, includes no fewer than thirty-three different bodies in this category.

I shall confine my remarks to three of these, however, viz., chloroform, ether, and alcohol, and mixtures of these three. Now, the state of unconsciousness induced by these anæsthetics is one in which voluntary motion and sensation are suspended, and the circulatory and respiratory centres are more or less untouched, their functions being duly carried on ; and the ideal anæsthetic would be one which, while throwing the cerebral hemispheres, that is, consciousness and sensation, and the basal ganglia and spinal chord, that is to say, voluntary and reflex motion, out of gear, would leave the medulla and its vital centres, the cardiac, vasomotor, and respiratory, untouched.

Neither chloroform nor ether is judged by this standard a perfect ideal anæsthetic, but of the two ether comes nearer this idealism than chloroform. Their physiological actions might be thus contrasted—chloroform depresses the heart, ether stimulates it ; chloroform paralyses the vasomotor centre in the medulla oblongata, ether has no such dangerous action. Chloroform therefore embarrasses much the respiratory function—a function largely maintained through a proper working of the vasomotor mechanism ; this is not so with ether. Ether is therefore the safer, and under proper management the more effectual anæsthetic.

But it is to two mixtures of these that I would particularly draw attention. These are what are called the Vienna and the A. C. E. mixtures. The Vienna mixture consists of ether and chloroform in the proportion of eight to one. It was first used in Vienna, and so effectual was it found that a law was even passed that no other should be employed in the hospitals there in medical practice. I am not aware that it has yet found favour in veterinary work, but I now wish to bring it prominently before the notice of the profession. The other mixture, the A. C. E., consists of alcohol, chloroform, and ether in varying proportions—a common ratio in medical practice being four parts of ether and two parts each of

alcohol and chloroform. This is regular in its action, effective, and altogether a good combination; and I may mention that so innocuous has it been found that no death has yet been recorded from its use.

And, in conclusion, I would only reiterate that in a mixture such as this a near approach to perfection is attained, inasmuch as it combines the good effects of each constituent while minimising the evils inseparable from all; that is to say, anæsthesia is established, but the vital functions of respiration and circulation are not interfered with more than is compatible with speedy restoration on the withdrawal of the anæsthetic.

I therefore wish to advocate not only a better recognition of the claims of these local anæsthetics for use in veterinary practice, but the trial of such a mixture as I have now indicated as infinitely preferable to any single one, both as perfectly safe and certainly efficacious.

TREATMENT OF IMPACTION OF THE COLON IN THE HORSE.

BY THOMAS W. CAVE, M.R.C.V.S., NOTTINGHAM.

WHILE a student at the Royal Veterinary College, it was my lot to read a paper before the Students' Veterinary Medical Association on "The Stomachs of the Ox and their Diseases."

In that paper I strongly opposed the administration of large and repeated doses of purgative medicines in cases of impaction of the rumen and omasum. In all works I had read treating upon these affections, the first thing recommended was the administration of purgatives; and my opposition to this course of treatment was based not on my own short experience, but upon the long practical experience of my father, who had repeatedly impressed upon me the futility of giving purgatives to relieve impaction of the stomachs in the ox. His advice was to give no solid food of any kind, and endeavour to induce the animal to ruminate by stimulating the muscular action of the stomachs. This advice was proved to be valuable by the satisfactory results of such treatment.

Since leaving college I have made a special study of the diseases of the bowels of the horse, and have come to the conclusion that the administration of purgatives to horses suffering from affections of the bowels is unwise and likely to produce serious results, especially in those cases so commonly met with, of impaction of the colon.

During the past eight years, a very large number of these cases has come under the treatment of my father and myself, but during

these years not one single drachm of aloes has been given, and every case of this kind has recovered.

This satisfactory result is, I firmly believe, mainly due to our refusal to administer purgatives and the method of treatment we have adopted.

On first seeing the case, which has probably exhibited symptoms of abdominal pain for several hours, we give an ordinary anodyne draught, or a hypodermic injection of morphia and atropine. In some cases the pain ceases and does not return, although no action of the bowels may be obtained for several days. In order to assist the action of the bowels, frequent enemata of warm water are given, and are persisted in until the bowels act naturally.

Other cases occur of a far more severe character, the pain being violent and more persistent, the number of the pulse and respirations much increased, with an anxious countenance, violent sweating, and ceaseless movements, the patient never remaining in one position for many minutes together—certain indications of the severity of the attack, and the probability that the mucous membrane of the impacted bowel is inflamed.

In these cases we do not give the ordinary anodyne which contains a stimulant, but rely upon repeated doses of opium by mouth, or morphia and atropine hypodermically, with frequent enemata of warm water.

The pain may last for many hours without any signs of relief, and we now need our greatest firmness to resist the frequent demands of the owner for the administration of purgative medicine. A strong blister is applied to the belly and the former treatment is continued, until at length the pain subsides, the coat dries, the countenance becomes cheerful, and the patient begins to look about the box for food.

There is still no action of the bowels, but the owner is satisfied at seeing his animal free from pain, though still he "wishes you could get a passage through him." He is assured that that is only a matter of time, and that he must have patience, the great object of the treatment being attained; for the animal is free from pain.

After the pain has ceased for a few hours, a little sloppy and warm bran mash is given at intervals, this being the only food allowed until the bowels have acted, when we allow a little scalded hay.

The bowels may obstinately refuse to act for days—in one case, I remember, for ten days; but the enemata are persevered with, and at last the water, which has until now been ejected as clean as when injected, becomes stained, and shortly afterwards a small quantity of hardened fæces will be passed, to be followed before

long by repeated natural evacuations of the bowels. The case now requires no further treatment, except careful dieting.

The majority of these cases are treated in our infirmary, and therefore are continually under observation; the box reserved for them is thickly bedded with sawdust; so that the patient cannot obtain a particle of food except what is given to him.

I claim for this method of treatment that it is successful, and that nothing is done which can aggravate the severity of the attack, the whole object being to get rid of the pain; when that is achieved, it is certain that the rest will follow in due course.

I cannot but think that the administration of aloes in such cases is likely to cause rupture of the bowels at the seat of the obstruction, by increasing the peristaltic action of the small bowels, and so forcing their contents into the already distended colon.

The same may be said of the administration of physostigmine, which increases the muscular action of the bowels, and tends to force the ingesta more closely into the distended gut. Of course, the bowel may bear the strain, and immediate relief result; but in a large number of cases I should expect to get a certain proportion of deaths from ruptured bowel as the result of the treatment, and I am strongly of the opinion that such cases would have recovered if less violent measures had been adopted.

It is certain that purgatives increase the pain, even if no rupture of the bowel takes place, and probably, too, will increase its inflamed condition.

The plan of treatment I have sketched out may be slower in obtaining the desired results, but it is sure and safe. The administration of sedatives and antispasmodics, whether by mouth or hypodermically, has a twofold effect—it allays the pain and quiets the bowel, relaxing muscular contractions, and giving the over-worked parts a much-needed rest.

We know that in "choking," the œsophagus grips the offending mass, and holds it firmly; is it not probable that the bowel also holds the mass of ingesta by the contraction of its circular muscular fibres? And this muscular contraction is overcome by the action of the sedatives, and the bowel is relaxed. At the same time, the enemas injected through a force-pump loosen the hardened mass of ingesta and gradually soften it; so that when the recovered bowel commences to gently force the ingesta backwards, the formerly hard and compact mass is now in a condition to pass through the narrower portion of bowel immediately behind the situation of the impaction, and a natural evacuation results.

The warm water of the enemas also acts beneficially as a local anodyne, helping to relieve the pain, and when ejected often carries

away quantities of accumulated gases which have aggravated the symptoms.

In all such cases as I have described, purgatives are, in my opinion, dangerous; indeed, I have been induced to give up the use of aloes in *all* cases of abdominal pain, believing that the object of the treatment adopted should be to relieve the pain; and this is best done by the exhibition of sedatives, which also control and quieten the action of the bowels. The hasty administration of aloes has probably caused the death of many horses suffering from Enteritis—cases which might have recovered if the bowels had been kept quiet.

I have also often marked with surprise the great length of time many necessarily fatal cases of volvulus, intersusception, ruptured stomach, etc., have lived under this method of treatment, and how greatly the sufferings of the doomed animals have been alleviated by the continued exhibition of sedatives.

It is a common practice to give aloes in cases of spasmodic colic: cases which might easily be relieved by the exhibition of a simple anodyne draught, and be ready for work as soon as the pain subsides, while, if aloes has been administered, a rest of several days must be allowed.

A letter which appeared in the *Lancet* for February 18th, 1888, very clearly shows the value of the system of treatment I advocate, as compared with the purgative system; and for this reason I venture to give extracts from it, for the benefit of those who may not have had the opportunity of reading it.

“*Case of Foreign Bodies in the Intestine.* In the January number of the *Revue Médico-Pharmaceutique*, the following case is recorded:—

“In November, 1887, a man consulted Dr. Siotis, on account of pain in the epigastrium due to the singular fact of his having swallowed fifteen Turkish gold coins. The day after the accident he took a strong dose of castor oil, which purged well, but failed to bring away any of the coins. Two more purgative doses only weakened him and increased his pain so much that he consulted Dr. Siotis. The doctor ordered rest, and pills containing extract of opium and extract of belladonna, one every hour. Next day three coins were passed with the fæces. On the following day four more coins were evacuated.

“The order was now, castor and croton oils to be taken. Active purgation followed, but no coins passed, and the pain increased so that the opium and belladonna pills were resumed. Next day two pieces were passed, but pain still remained; the pills were continued, and eventually all the coins were evacuated and the patient reported himself perfectly well.”

Dr. Thorowgood, who reported the case in the *Lancet*, points out the uselessness of active purgation, and the satisfactory results that followed the administration of opium and belladonna; and observes that some knowledge may be gained from the case, of the way the intestines move and act under the influence of strong purgatives on the one hand, and antispasmodics on the other, and so we may learn something to help us in the treatment of some forms of constipation and obstructed bowel.

In conclusion, let me say that this case shows so marked a contrast between the two methods of treatment, and so clearly points out the best way to obtain the desired results, that I cannot do better than leave it to tell its own tale, and carry conviction to the minds of those who may not feel inclined to fall in with the views I have advocated in this paper.

PURPURA HÆMORRHAGICA PROBABLY CAUSED BY "WORMS."

BY FRANK W. SOMERS, M.R.C.V.S., LEEDS.

ON January 30th I was called in by a large coach proprietor to examine an aged brown horse which had suddenly been taken ill. On visiting this animal, I found the case to be one of *Purpura Hæmorrhagica*. The drainage of the stable was good, and the place was well ventilated. I at once had the horse removed and placed in a loose-box with an abundant supply of fresh air, and although the symptoms were well marked he appeared very bright, notwithstanding his being wretchedly poor in condition. Temperature, 102°. I prescribed the usual treatment, and Pot. chlor. 3ʒ twice a day, in order to prevent the occurrence of further extravasations and congestions. Good food was regularly supplied, although the appetite was very indifferent.

On Jan. 31st the animal was not so well, the swellings having extended from the chest and abdomen towards the head, and the breathing had become more difficult in consequence.

On Feb. 1st and 2nd he seemed to be getting weaker, and although there was no change in the temperature of the body, the breathing was becoming so difficult that I had a consultation with the owner. Seeing that the animal was very old and so poor and weak, the owner suggested destruction, which was undoubtedly the wisest course to take, seeing that the patient could scarcely have recovered, and the emaciation was now so extreme.

On Feb. 3rd the horse was destroyed, and I made a *post-mortem* examination, when I found the usual *p.-m.* appearances of this disease with a very unusual quantity of "worms"—in fact, I

never heard of a case where so many worms were found in one animal. From the stomach down to the end of the intestines these worms were in great quantities, and within the small intestines they seemed to be one living mass. They were the "*Ascaris megalocephala*," known amongst veterinarians as "lumbrici." Their quantity was so great, that they would have filled two or three buckets. This would account for the condition of the animal, which I was told had always been very poor. The worms seemed to be coiled together all along intestines, and the small intestines were even occluded by them.

I am aware that some celebrated veterinary works say that *Purpura Hæmorrhagica* is only caused by the absorption of some effete on septic materials *extrinsic* to the body; but in this unusual case, if the disease was not caused by some decomposing materials from these worms *intrinsic* to the body, then their presence had produced a morbid condition which was favourable to the development of "purpura."

VACCINATION OF PUPPIES FOR THE PREVENTION OF DISTEMPER.

BY A. W. BRIGGS, M.R.C.V.S., HALIFAX.

SOME few weeks ago I was consulted as to the advisability of vaccinating a mastiff puppy as a preventive of distemper.

I at once confessed my ignorance of any such operation, and being anxious to investigate the matter, I was referred to Mr. Ambler, of Luddenden—a gentleman whom I knew to be of the highest integrity of purpose, and a keen observer of things appertaining to the welfare of domesticated animals. I may mention, *en passant*, that Mr. Ambler was one of those who gave "ensilage" a consistent trial, with a view to ascertaining its value as a food-stuff for cattle, and the results of his experiments were, at the time, published in some of the leading agricultural journals.

I sought out Mr. Ambler, and found, as I suspected, that pure vaccine was the material inoculated. I had no difficulty in inducing him to place upon paper his experience of the operation, and he consented to the publication in the *VETERINARY JOURNAL* of his letter to me, which I enclose herewith.

At the time of this inquiry, I had a M.R.C.V.S. assisting me in my practice, who had performed the operation many times whilst with his previous employer, but who could give me no information as to the material inoculated, further than the name of the firm of London chemists who supplied the "points" used by him. I wrote to the representative of this firm, who, in reply, stated: "I have been in the habit of supplying vaccine in tubes and upon

points, for many years, to veterinary surgeons for vaccinating puppies as a preventive of distemper, and its results have for the most part proved effectual, though I am quite at a loss to give the why or the wherefore ? ”

Now, after stating these few facts as briefly as possible, I would like to ask one or two questions that present themselves to my mind, viz :

Firstly :—Is there any relation between either variola or vaccinia on the one hand, and distemper (so-called) of the dog on the other hand ?

Secondly :—If there is no such relation, are we justified in attributing the reported immunity from disease to the operation ?

Or, Thirdly :—Are not the supposed results mere matters of coincidence ?

Personally, and with all due deference to my friends, I cannot refrain from stating that I received the above information *cum grano salis*, but if any of the numerous readers of the JOURNAL can give me through its medium any further information I feel sure I shall not be the only practitioner benefitted thereby.

DEAR SIR,—Referring to the conversation I had with you a little while ago about vaccinating my young dogs for some years back as a preventive against distemper, I have pleasure in stating that previous to operating on them I could scarcely rear a single pup. I lost mastiffs, pointers, and setters ; but since I commenced vaccinating I have not lost one. I would not wish you to infer that they have all been entirely free from distemper, but it only appeared in a very mild form.

I may also say that two or three weeks ago whilst in the West of England (at Gloucester) I met a gentleman at the same hotel I was staying at, whose experience about rearing puppies agreed with mine. He told me that he had been in the habit of breeding very high-bred animals for show purposes (and I suppose the better bred the more difficult to rear), and that he lost so many in distemper that he began to despair, and gave up breeding altogether for a time ; but having heard of the vaccinating process he adopted it and tried again, and has since been very successful indeed, rearing three out of every four on an average. Yours, etc.,

JAMES AMBLER.

Editorial.

THE EXTINCTION OF CONTAGIOUS PLEURO-PNEUMONIA.

At last the Government has had the courage and wisdom to proclaim measures with regard to combating the Contagious Pleuro-pneumonia of cattle, which it might have resorted to with great advantage to the public years ago. In what is designated "The Pleuro-pneumonia Slaughter Order of 1888," passed on March 6th, the Privy Council orders the destruction of all cattle which have been exposed to infection through contact or cohabitation—or, in other words, which are, or have been, "in the same field, shed, or other place, or in the same herd"—with cattle suffering from the disease, within ten days after such contact has been ascertained, "or within such further period as the Privy Council may in any case direct." A Local Authority, acting on the certificate of the Inspector of the Privy Council, shall cause such cattle to be slaughtered; and until this step is taken, they are to be kept in a shed or other place approved by the Privy Council, only to be moved therefrom for immediate slaughter, no other cattle being admitted to these places during such detention. Licenses are necessary for moving cattle for slaughter, such licenses being available only for twelve hours, and they are to specify the slaughter houses, while movement is to be made under the direction and in charge of an inspector or other officer of the Local Authority, who is to enforce and superintend their immediate slaughter.

Compensation for slaughtered cattle is to be paid out of the local rate, the amount to be the value of the animal immediately before it was killed, though it is not to exceed forty pounds in any case—exception being made with regard to animals suspected to be affected with Pleuro-pneumonia.

Disinfection is also to be carried out, and at the expense of the Local Authority.

These measures are to be carried out in the United Kingdom, and it will be interesting to watch their operation. The protective effects of inoculation are not mentioned, and against such wholesale destruction there are certain to be strong protests. Certainly, the centres of infection are comparatively few, and if the Slaughter Order is carried out promptly and vigorously the malady should soon be extinguished. But there is great danger that outbreaks will be concealed and the provisions of the Order evaded. We may expect an agitation in favour of imperial instead of local compensation; but there can be no doubt that if compensation were granted by Government, grave abuses—abuses which are not likely to occur when the local rate is the source—would be far from uncommon.

We suppose the carcasses of the slaughtered cattle will be utilised as human food, and there can be no reason why they should not, if found healthy; this will diminish considerably the cost of stamping out the scourge.

Of the necessity for issuing this Order there can be no doubt whatever; it has been painfully evident and strongly insisted upon for

years, and it is a matter for surprise and regret that it was not issued long ago.

Once the disease is extinguished, all that will be needed will be vigilance to keep it out of these islands, a task which should not be difficult. In the meantime, a heavy, and by no means an enviable duty, is imposed upon the members of the veterinary profession in carrying out the Slaughter Order, and upon them largely rests its success.

EXTRACTS FROM A PAPER ON DIPHTHERIA IN POULTRY.

BY MAG. A. V. KRAGEWSKI, CHERSON, RUSSIA.*

THE Diphtheria of poultry and other domestic birds is an infectious epizootic disease, which, when once it has obtained a footing in the poultry-yard, remains for a long time (months, and, according to Professor Zürn, years), owing to its slow course. The malady is spread by a contagium which is to be found in the excretions of the diseased. It has an incubative period of five to seventeen days, according to Löffler, but the author says four to ten days.

Birds are known to suffer from several varieties of disease of the mucous membranes: (1) Common Catarrh (*Coryza avium*); (2) Gregarinosis, a malady due to the presence of psorospermes; (3) Diphtheritis or Croupous Diphtheria.

The inoculability of Diphtheria has been denied by Siedamgrotzky and Perroncito, but Nicate, Cornevin, Princker, Gerhardt, and Löffler assert that not only poultry, but rabbits may be artificially infected. The author's positive results lead him to support the views of the latter.

The etiological question of Diphtheritis in human medicine has not yet been exhaustively answered up to recent times. Although observations by many skilled investigators are not wanting, they have agreed so little, and have been attacked so much, that the question of contagium [as between animals and man?] can only be surmised from the great similarity in the symptoms of the diseases; but an important advance has been made by the discoveries of Oertel and Klebs of the bacterial nature of the malady.

A similarity in the symptoms of poultry and human Diphtheria, combined with a simultaneous outbreak in both subjects, witnessed by Löffler, caused him to submit the organs and excretions of some pigeons which had succumbed, to a very searching examination. He was able to detect, isolate, and cultivate a bacillus closely resembling that found in Rabbit Septicæmia.

From pure cultivations he succeeded in producing fatal Diphtheria in healthy pigeons, but when fowls, sparrows, and other small birds were inoculated, the results were not always satisfactory.

The inoculation of rabbits and mice produced in five to seven days a typical, regular infection.

Gerhardt, who watched the Diphtheria epidemic in Nesselhausen (Baden), found it was caused by an epizootic amongst pigeons, and he asserts that the avian disease is communicable to man, and produces a malady very similar to ordinary human Diphtheria, and can only be distinguished by the benign course it runs. Boing, Fleming, Smith, Zürn, and others maintain that the malady is communicable from man to animals, and *vice-versa*, and that the human patients thus infected show the usual symptoms of ordinary Diphtheria; and by his own observations the author is led to the conclusion that all cases of Diphtheria in birds are part of a general epidemic.

* Translated by F. Raymond, A.V.D.

CONTAGIOUS PLEURO-PNEUMONIA.

ON March 19th, at the Privy Council Office, Viscount Cranbrook (the Lord President) and the Marquis of Lothian (Secretary of State for Scotland), who were accompanied by Mr. C. Lennox Peel, C.B., Clerk to the Council, and Professor G. T. Brown, of the Agricultural Department, received a deputation from local authorities of Scotland in reference to a proposed inquiry into the causes and treatment of Pleuro-Pneumonia. The deputation, which represented twenty-nine local authorities, was accompanied by the following Members of Parliament:—Colonel J. Hozier, Mr. Craig Sellar, the Hon. G. R. Vernon, Mr. R. W. Duff, the Hon. R. Preston Bruce, Mr. Barclay, Mr. M'Lagan, Sir Archibald Campbell, Mr. Barbour, Mr. H. T. Anstruther, Mr. Mark Stewart, and others.

Colonel HOZIER, Convener of Lanarkshire, said that for several years past there had been a constant increase in the number of outbreaks of Pleuro-pneumonia and in the number of cattle affected. In 1884 there were 55 outbreaks of Pleuro-pneumonia in Scotland; in 1885, 60; in 1886, 94; and in 1887, 339. The compensation paid in respect of slaughtering in 1884 was £5,581; in 1885, £10,391; in 1886, £15,131; and in 1887, £34,593; and altogether a sum of £65,697 had been paid in compensation during the last four years. The recent Order in Council might possibly tend to do some good, but it contributed very considerably to increased expenditure for compensation. It was this enormous expenditure, combined with the failure of the past treatment of the disease, that had led them to feel that there was absolute necessity for inquiry. There was a strong feeling in favour of inoculation. The deputation submitted the following questions to the Government for inquiry:—(1) How the disease is propagated, and how long it may remain latent; (2) how far the disease may be carried, and what may be considered an infected area; (3) whether infection can be resident in places such as byres, trucks, boats, or pens which diseased animals have recently occupied; (4) at what stage the disease begins to be infectious, and whether it is able to be detected before that time; (5) whether inoculation gives permanent protection against the disease, or how long it may be capable of doing so; and (6) whether an animal which has been inoculated can, six weeks or more thereafter, propagate the disease. The deputation suggested that the proposed investigation should be a Royal Commission.

Dr. AITKEN also spoke in favour of inoculation.

Viscount CRANBROOK, in reply, said the Government were quite aware of the extraordinary spread of Pleuro-pneumonia in Scotland. In the return which had been handed in by the deputation it was simply stated that inoculation had been of use in preventing the spread of disease. In 1883 there were 16 outbreaks and 47 cattle attacked; in 1884, 24 outbreaks and 76 attacked; in 1885, 15 outbreaks and 60 attacked; in 1886, 58 outbreaks and 227 attacked; and in 1887, 64 outbreaks and 233 attacked. Therefore it would appear upon the returns that the practice in Edinburgh had not tended to decrease either the number of outbreaks or the number of cattle attacked. He admitted that there was a case for inquiry. Though he could not promise them a Royal Commission, he would promise that there should be a very careful inquiry. If there should be an inquiry, the Order which the Privy Council had recently issued would remain in force. Ireland was now in harmony with them, and was bent, if possible, on eradicating the disease. If the order proved effective in Ireland in eradicating the disease, it would tell them something in respect of the steps which should be taken in Scotland and England. They had been so successful with respect to Foot-and-Mouth Disease and Cattle Disease that they ought not to give up hope at once of dealing satisfactorily with Pleuro-pneumonia. He believed there

had been no case in England of Foot-and-Mouth Disease for more than two years; and they might now hope that, unless it was brought in from abroad, that disease was eradicated.

Colonel HOZIER then addressed the Ministers upon the proposal that owners of cattle should be compelled to report all cattle which had died, or which they had slaughtered on account of the disease. He said there were cases of concealment of infection on the part of owners, arising sometimes from ignorance, but very often from the selfish motives of unprincipled persons.

Viscount CRANBROOK, in reply, said that with regard to reporting all deaths it would be almost impossible.

Mr. MARK STEWART, M.P., suggested that the veterinary surgeons should be compelled to report all such deaths at once.

Viscount CRANBROOK thought that would not meet the case, because if a farmer considered that one of his animals was failing, and that he could make something of it with the butcher, he was not likely to call in the veterinary surgeon.

ROYAL VETERINARY COLLEGE.

WE have reason to believe that Professor Brown, C.B., has been appointed Principal of the Royal Veterinary College. Professor Axe becomes lecturer on Horse Pathology, and resides in the College; while Professor Penberthy takes over the duties formerly allotted to Professor Axe.

PRESENTATION AT COURT.

AT the Levée held on March 7th, at St. James's Palace, Professor George Brown, C.B., was presented by the Lord President of the Privy Council, on the occasion of his having been made a C.B. We believe this is the first time a civilian member of the profession has been presented at Court as such—a notable circumstance. Army veterinary surgeons have been presented for nearly five years, being eligible irrespective of any special occasion.

A GRACEFUL COMPLIMENT TO THE ENGLISH VETERINARY PROFESSION.

THE *Morning Post*, in its issue of February 29th, alludes to the election of Dr. Fleming, Principal Veterinary Surgeon of the Army, as a Foreign Member of the *Société Nationale D'Agriculture* of France, and in stating that the Society accords the same kind of recognition to agriculture that the French Academy does to literature and science, designates the election as "a graceful compliment to the English veterinary profession." Our readers will perhaps be better able to appreciate the compliment, if we glance at the history and constitution of the Society.

It was established by a decree of the Council of State of Louis XV. in 1761, by the title of *Société Royale d'Agriculture de la Generalité de Paris*. By an ordinance of Louis XVI. in 1788, it was designated the *Société Royale et Centrale* for the entire kingdom, and regulations for its organisation were framed. Under this new form it remained until the suppression of all the learned societies during the revolution in 1793, when it disappeared. On the return of comparative tranquillity, it was re-constructed in 1798, and named the *Société libre d'Agriculture du Département de la Seine*. The Emperor Napoleon I. in 1804, authorised it to assume the title of *Société Imperiale d'Agriculture*, and placed it somewhat on the basis of 1788; and in 1815,

Louis XVIII. empowered it to adopt again the title and privileges conferred upon it in that year. In 1848, the Society, by decree, was named *Nationale and Centrale*, and it was divided into sections, its members being limited to fifty-two, and their mode of election fixed. A decree of Napoleon III. in 1853, again changed its title to *Imperiale et Centrale Société*, and another of 1860 named it the *Société Imperiale et Centrale d'Agriculture de France*; while decrees of the President of the Republic in 1878, 1879, and 1880 completed the organisation of the Society, which then received the title it now bears, and provided regulations as to the privileges and duties, as well as the mode of election, of its national and foreign members, its associates and correspondents. The number of members is very limited (fifty-two national or titular members, and fifteen foreign members), as is also that of the associates (forty national, no foreign) and correspondents (150 for France, Algeria, and the French Colonies, and fifty foreign). They are divided into two classes; the first is that of Agricultural Sciences (*Sciences agricoles*), which comprises five sections. The first of these deals with what is called the *grande culture*, and has six national associates, two foreign members, and twenty-five national correspondents; the second section, dealing with special culture, has four national associates, one foreign member, and twenty national and seven foreign correspondents; section three, to which is allotted woods and forests, has three national associates, one foreign member, and twenty national and seven foreign correspondents; the fourth section occupies itself with animal economy, and consists of five national and two foreign members, and twenty-five national and eight foreign correspondents; while the fifth section, or economical, is devoted to statistics and agricultural legislation, and has three national and one foreign member, and fifteen national and five foreign correspondents. The second class includes the sciences applicable to agriculture, and is divided into three sections; the first of these deals with the agricultural physico-chemical sciences, and is allotted three national and one foreign member, and fifteen national and five foreign correspondents; section two engages itself in agricultural natural history, and is composed like the last, as is also the third section, which deals with agricultural mechanics and irrigation. There are also two special sections (*sections hors cadre*), one for national, the other for foreign members.

Among the national members are the most famous scientists of France, in the animal economy section being the two well-known veterinary authorities—Chauveau and Goubaux. The foreign members in this section only number two—Dr. Willems of Hasselt, Belgium, elected in 1882, and Dr. Fleming, just elected. The English representatives are very few; besides the last-named, the Prince of Wales and Sir Richard Owen (the anatomist) are in the special section of foreign members. Sir James A. Caird is in that of statistics and agricultural legislation, Sir James B. Lawes in that of the agricultural physico-chemical sciences. Among the thirty-six foreign correspondents there are only two English names, that of Professor Wilson, Edinburgh University, who is in the statistical section, and J. Miles Berkeley, who is in the natural history section. There are only two foreign correspondents in the animal economy section. The election of foreign members appears to be very infrequent. Of the thirteen now on the list four were elected in 1856, one in 1877, three in 1881, one in 1882, two in 1883, one in 1885, and one in 1888.

It may be remarked that the names of the national and foreign members and national associates must be submitted for the approval of the President of the Republic before their election can be confirmed; those of correspondents only require the approbation of the Minister of Agriculture.

The mission of the Society is not only to enlighten the French Government on all questions pertaining to rural economy, but also to bestow rewards

on the authors of useful discoveries, or works which may aid the progress of agriculture. Looking down the list of members since the Society was established in 1761, we notice among the celebrities of science many names of French veterinarians, which the history of our profession conspicuously favours, and among these are Bourgelat, founder of modern veterinary science, Chabert, Delafond, Flandrin, Garsault, Bouley, Chauveau, Goubaux, Huzard, Magne, Renault, and Reynal.

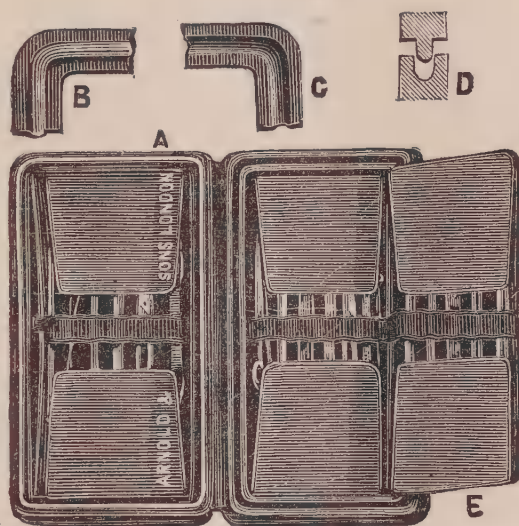
Until the election of Dr. Fleming, no veterinary surgeon had been elected a foreign member, and he is now the only one. There are no veterinary surgeons foreign associates or correspondents; indeed, there has only been one since the Society was founded—Professor Viborg, of Copenhagen, who was elected a foreign associate in 1801.

We have ventured to give a short sketch of this somewhat exclusive Society, in order that the profession in this country may be able to estimate the honour which has been conferred upon it, an honour of which we, personally, are deeply sensible, and one of which no other country can boast.

A most remarkable circumstance in regard to the bureau of the Society for this year, is the fact that the President is the famous chemist, Chevreul, who is more than a hundred years old.

IMPROVED POCKET-CASE FOR INSTRUMENTS.

(PATENTED.)



THE above woodcut depicts a new form of case, being impervious to water, and air-tight.

The frames, Fig. A, are made of metal, one side grooved, the other raised; when closed wedging together, Figs. B, C, D. The frames are covered with fish skin, prepared similar to leather, being in itself waterproof.

This invention is also applicable to the Army Regulation Pouches.

Army Veterinary Department.

Gazette, March 20th.

Veterinary Surgeon John B. W. Skoulding, has been placed on retired pay, March 18th.

Veterinary Surgeon Richardson has arrived in England from Karachi on twelve months' sick leave.

At the Levée held by command of the Queen at St. James's Palace, on March 7th, by H.R.H. the Prince of Wales, the following presentations were made:—

Principal Veterinary Surgeon, Dr. George Fleming, C.B., on being made a C.B., presented by the Duke of Cambridge.

First-class Vet. Surg. A. E. Queripel, presented by the Principal Vet. Surg.

"	"	C. Phillips	"	"	"	"
"	"	J. Hammond	"	"	"	"
"	"	J. Burton	"	"	"	"
Veterinary Surgeon		R. Pringle	"	"	"	"
"	"	E. Day	"	"	"	"
"	"	C. Rutherford	"	"	"	"
"	"	H. T. W. Mann	"	"	"	"

First-class Veterinary Surgeon F. Walker, 1st Life Guards, attended the Levée.

Obituary.

Death has removed from our ranks a very worthy and respected colleague, Mr. T. W. Gowing, F.R.C.V.S., London, who died on March 16th, aged 80 years, though he only graduated in 1847. He served the offices of Vice-President and Councilman for sixteen years, during which period he was zealous in assisting in promoting the advancement of the profession in every way he could. He also contributed valuable information on professional subjects to veterinary periodicals; and as a Fellow of the Central Veterinary Society at its formation, and for some years subsequently, he displayed his enthusiasm and great practical knowledge, greatly to the advantage of his colleagues.

Mr. George South, M.R.C.V.S., London, another old and esteemed member, has also left us at a ripe age, he having graduated in the same year as Mr. Gowing.

Mr. E. M. Davy, M.R.C.V.S., late of St. John's Wood, London, a comparatively young member (having graduated only in 1877), is reported dead.

Henry Peele, M.R.C.V.S., of 11, Tower-street, West Hartlepool, died February 28th, 1888, aged forty-seven years. He was a native of Durham, and settled in West Hartlepool in 1863 (his diploma bearing the date April 27th, 1863), where he soon formed an extensive connection.

He was the Veterinary Inspector to the Privy Council for the port of Hartlepool; Veterinary Inspector for the boroughs of Hartlepool and West Hartlepool; as well as being the Local Veterinary Inspector for the West Hartlepool Division of the County of Durham. The Royal Agricultural Society of England appointed him their consulting veterinary surgeon for his district. He contracted a severe cold in carrying out his professional duties, which developed into a fatal attack of Pneumonia. Most of the leading people of the district followed the remains of the deceased to their resting-place; all classes, both rich and poor, were strongly represented at the funeral.

Jurisprudence.

IMPORTANT CHARGE OF CRUELTY—VETERINARY EVIDENCE.

ON February 20th, at the Leeds Town Hall, before Mr. Bruce, stipendiary magistrate, Mr. W. Wharam, manager; John Unwin, bus driver; and Thomas Mahon, horsekeeper, in the employ of the Leeds Tramways Company, were

summoned for having cruelly ill-treated and tortured a horse on January 7th. Mr. Warren prosecuted on behalf of the Royal Society for the Prevention of Cruelty to Animals. Mr. H. A. Child, Leeds, defended. Mr. Child asked that all professional witnesses in this case should leave the court, and although the request was a very unusual one, it was complied with. A life-size model of a horse's head was produced in court, to which was fixed a "rope gag"—an exact copy of the one which was used by the defendants. For the prosecution two independent witnesses and two policemen having given evidence,

Inspector Alexander, of the R.S.P.C.A., was called, and said that he was in Briggate on January 7th, at twelve o'clock, when he saw Unwin driving two horses in a "bus." He noticed that one of them was much distressed, that its mouth was gagged up, the tongue was swollen and discoloured, and protruding from the mouth at the side. Witness had had twenty years' experience of horses. The animal was wearing heavy kicking tackle of chains and straps along with the "cord rope gag," and the "gag" was fastened tightly. The driver saw him watching the horse, and he turned into Duncan Street, and went to the back of the Corn Exchange. Witness followed, accompanied by two constables. In Crown Street he saw the horse being hurriedly taken out of the bus. The kicking tackle was removed, and witness examined the horse. The horse was gagged to prevent it getting its head down, and the weight was thrown on the mouth instead of on the collar. There were wounds on each side of the mouth. Witness asked Unwin why the animal was being tortured with the "gag," and he replied, "I know it's punishing it, but I didn't put it on. I've had to drive it like that since eight o'clock this morning." There was a crowd of people about, crying "Shame!" Accompanied by P.C. J. Smith, he followed the horse to the tramway stables in North Street. He there saw Mahon, the foreman, and called his attention to the horse. He asked Mahon if the gag was put on by his orders. Mahon replied, "Yes, I put it on; it is not a 'gag,' it is only a bearing-rein to keep his head up." A bearing-rein had a proper bit, and was a very different thing. It (the gag) was crossed in the mouth, and passed through a ring, and back to the saddle. Mahon afterwards said, "I see it's punished him a bit, he wants punishing, he's a kicker." Mahon was abusive, and asked what he knew about a horse. Mahon ordered the horse to be put in the stable, and slammed the door in the face of himself and constable, and said, "You don't go in there! You are trespassers and impostors here, and I order you off the premises. That's the Company's orders." Witness then took Mahon's name and address. Witness went two hours afterwards with Mr. Frank Somers, veterinary surgeon, to the stables. Mahon allowed Mr. Somers to make an examination of the horse, whose mouth seemed then to have been cleansed. He asked Mahon to let Mr. Somers see the "gag," and he did so, expressing a wish that witness had the rope round his neck. Next day witness saw Unwin, who said that Mr. Wharam, the manager, saw the horse shortly before witness did on the 7th, and said that he was to give it another journey. Witness went to the Company's office, and Mr. Wharam admitted the fact. Witness had heard of the Yankee check-rein, but had not seen one, and could not say whether this "gag" was such a rein. Mahon said he had used it for years, and with the best results.

Mr. Frank W. Somers, M.R.C.V.S., Leeds, said: He was in practice in Leeds, and was called in to see the horse in question on January 7th. He had an opportunity of examining this animal two hours after it had been stopped by the Inspector. He found on each side of the mouth at the angles, two raw wounds, which had been recently done, and congestion of the tongue, and inflamed gums. He had seen the "gag" which had caused

these injuries, and he considered it a very cruel apparatus. In his opinion, such an apparatus would torture the animal's mouth while extending or lowering the head. He had never seen such a thing used. He had seen the "bit," which was covered with blood. He strongly commented upon the barbarous practice of using such an apparatus, even if it might prevent kicking. Such an apparatus as a "gag-rope," or, as it was termed by the defendants, a "check-rein," would undoubtedly cause great pain, particularly if it was worn long, and if for four hours, would certainly be torture. He condemned the use of "bearing-reins," and this apparatus was much worse.

Professor Pritchard, a member of the examining body of the Royal College of Veterinary Surgeons, and a practitioner in London, said that the apparatus described would undoubtedly cause pain. If a horse's mouth was covered with blood there would be clear evidence that the horse had suffered pain. It would punish the horse considerably to keep it in the position illustrated for four hours. In fact, it would cause pain if such an apparatus was only applied for some few minutes. It is not necessary to punish a horse to prevent it kicking. He did not think a horse could draw a load or a vehicle with the lower jaw and all the weight on the bearing-rein. There are many horses in London with "check-reins" on, but certainly not with an apparatus of torture like the one described. The instrument used in this case would not prevent an animal kicking.

Mr. E. H. Scott, M.R.C.V.S., Harrogate; He had seen the apparatus described, and considered that it would certainly be an act of cruelty to apply it. He said it would cause considerable pain to the animal. He had never seen anything like it before, and, even if it were judiciously applied, would not prevent an animal kicking.

Mr. George Hardie, M.R.C.V.S., York: The apparatus used to prevent the horse kicking was, in his opinion, an act of cruelty. He had been in practice for twenty years, but had never seen anything like the instrument in this case.

Mr. Fred Proctor, M.R.C.V.S., Manchester, corroborated the former statements. He said he had seen a similar apparatus used in Manchester some ten years ago. He certainly considered it an act of cruelty.

This concluded the case for the prosecution, when Mr. Child had each of the defendants in the box.

Thomas Mahon said that he had been six years in the employ of the Leeds Tramway Company, and had had thirty years' experience of horses. This horse had become a kicker, and had been sent to them to put in a 'bus. He employed upon it the over-check rein used for years. The tackle was fixed to the roll-bolts of the splinter-bars. He had seen it used scores of times, and it had been mostly effective. So long as the horse behaved itself the rein would inflict no pain. In the present case a slight skin-wound was caused. The best judges would approve of the treatment. He said Mr. Wharam did not know of the treatment applied.

John Unwin, one of the defendants, deposed that he had driven the horse five times. On the day in question he ran very quietly, and his head was not too tight.

For the defence, along with several horse-dealers, was—

Mr. John H. Ferguson, M.R.C.V.S.: He was called in to see the horse on January 9th, two days after it had been stopped by the inspector. He did not find its tongue swollen, and if it had been there would have been some trace of it. He noticed a scar about the size of a shilling on the outside of the mouth, which, he considered, had been caused by the horse rubbing its head against the pole-bar. The apparatus used would prevent an animal kicking; he thought it would simply check him without doing the horse an

injury, and would not cause his mouth to bleed. He stated that the horse was suffering from "humour," and he ordered medicine, as it was "too full of blood." He had never seen such an apparatus before.

Mr. John McLean, M.R.C.V.S., assistant to Mr. Ferguson, stated that he had examined the horse on January 9th, two days after it had been stopped, and he found nothing whatever in the way of wounds or cuts; there was a small scar on the face. If there had been any wounds inflicted on the Saturday he should expect to find something on the Monday. He had seen the apparatus, and it could be adjusted as to cause no pain. This apparatus would prevent kicking, without causing any pain whatever. He should think that the scar on the face was caused by the horse rubbing its head against the pole-bar.

Mr. A. W. Mason, M.R.C.V.S., Leeds: He had seen this apparatus. It is something similar to the illustration which was in Court on the table. It would have a check upon horses kicking, and, if properly adjusted, would not injure the animal. It would check the horse by keeping its head up. If the horse kicked, and the apparatus caused the animal pain, he did not think the animal would continue to kick.

Mr. George E. Bowman, M.R.C.V.S., Leeds: He had seen the apparatus fixed on the horse, and, in his opinion, would prevent kicking if it was adjusted so as to cause the animal no pain. He thought this apparatus would have a better effect upon a vicious horse than the ordinary kicking-cradle. He had seen the apparatus used about six times.

Mr. Child having spoken on behalf of the defendants,

Mr. Bruce dismissed the summons against Wharam, observing that there was no evidence against him. He thought the apparatus was not a reasonable one to prevent kicking. He fined Mahon £5 and costs, or in default one month's imprisonment; and Unwin 40s., or one month's imprisonment.

A REMARKABLE HORSE CASE.

In January last, in the High Court of Justice, before Baron Huddleston and Mr. Justice Manisty, the case of *Tunaley v. Benton*, came on for hearing. This was an application by the plaintiff for a new trial. He was a horse-keeper at Wymondham, and purchased a pedigree horse called "Reliance" of Mr. Thomas Benton, of Earith, Huntingdonshire, for £145, warranted sound. It was alleged it had Bone-spavin. The case was tried at Lincoln assizes, when the jury found a verdict for the defendant.

Mr. Poyser (instructed by Mr. Linay, of Norwich) now appeared for the plaintiff, and Mr. Horace Brown and Mr. Le Riche for the defendant.

The new trial was asked for on the ground that the verdict was against the weight of evidence, and also upon the somewhat unusual ground that the defendant, Mr. Benton, was alleged to have deceived the Court at Norwich assizes by producing a horse for examination which, it was alleged, was not the one in dispute; and, further, upon the ground that it was alleged by the plaintiff that Mr. Page Wallis, of Cambridge, who had testified at the trial that a horse he had examined, and stated had no Bone-spavin, was not the one in dispute.

Upon reading the Judge's notes at the trial, Mr. Baron Huddleston remarked that Mr. Poyser would have a difficult task to upset the verdict on the ground that it was against the weight of the evidence, for though it was true that Mr. Santy, of Norwich; Mr. Lowe, of Norwich; and Mr. Anger, veterinary surgeons, had given evidence to the effect that the horse had Bone-spavin, yet it appeared that Mr. Beart, of Lynn, and Mr. Gresswell, both veterinaries of very superior knowledge; Mr. Page Wallis, of Cambridge, a veterinary surgeon of almost unassailable experience, besides three other

persons, had all sworn that the horse was perfectly sound. Hence the Court would not be likely to interfere with the verdict of the jury on such a conflict of evidence.

Mr. Poyser: But we say the horse that Wallis examined was not the same horse.

Mr. Baron Huddleston: Yes, I know. You allege that a scandalous fraud has been committed. That you'll have to prove.

Mr. Poyser then read the evidence of Frederic George Waring, of Earith, Huntingdon, a groom. It was to the following effect:—That he well knew the horse "Reliance," being groom to the defendant. That the defendant had in his possession another horse very much like the one called "Reliance," and after the dispute about "Reliance," when Benton had bought him in at the auction, he called Mr. Page Wallis and Mr. Gresswell, of Peterborough, in to examine the other horse, which was somewhat similar in appearance to "Reliance," and that this was the horse that they swore to at the trial. He further stated that he was ordered by the defendant not to show the veterinary surgeons the real horse.

Mr. Baron Huddleston: This is a bold affidavit, Mr. Poyser. I call your attention to the fact that there are twelve alterations in the original one. Now let me see what Mr. Benton says in answer to it.

Mr. Benton's affidavit was then read. He said it was absolutely untrue that Wallis and Gresswell saw the other horse, and, moreover, both horses were produced at Norwich assizes, so that there should be no mistake; that Waring was then in his employ; that some time after the trial he had to discharge Waring, or threatened to do so; that four days after that he left Benton's employ without notice. Mr. Benton then went on to say that the affidavit by Waring was sworn at the house of a man named Chandler, in Earith, against whom Benton had recovered judgment in the County Court, and bore him (Benton) ill-feeling. The affidavit of Waring was sworn before Chandler's solicitor in the County Court action, who must have come from St. Ives, a distance of six miles, for the purpose.

Mr. Baron Huddleston: Oh, I see it all now. I thought there was something behind. Now it appears they have got hold of a man who had lost his situation, and then bring over a solicitor specially to swear him to an affidavit which charges a scandalous fraud. I see Mr. Page Wallis also denies it. Every step you take, Mr. Poyser, shows your application to be untenable. Now, if you will go on after what I have said, go on.

Mr. Poyser still urged that the verdict was against the evidence.

At the conclusion, Mr. Baron Huddleston said: We won't trouble you to address us, Mr. Horace Brown. This is as clear a case as I ever saw. The verdict was quite right. No doubt three veterinary surgeons swore the horse had Bone-spavin, but seven competent witnesses swore he had not. So the jury had to decide. Mr. R. Poyser sneers at the jury because they were farmers. Why should a jury of Norfolk farmers not know Bone-spavin? I should think they do, as I know something of Norfolk. No doubt Santy was very sanguine, but the twelve jurors did not agree with him. I think the balance of testimony was in favour of the defendant, and will not disturb the verdict. But besides this I think that Waring's story, which alleges a most extraordinary fraud, is a cock and bull story. As gross and scandalous and criminal as I ever heard is the fraud which Mr. Poyser asks us seriously to believe. I emphatically say I don't believe Waring. This appeal must be dismissed, and with costs.

Mr. Justice Manisty: I entirely concur. To my mind this verdict was a right one, even if the evidence of the defendant's veterinary surgeons was entirely out of the case. The jury saw the horse, it was admitted to be the same, and they found he had not Bone-spavin. As to the charge of fraud, that is a perfectly idle and scandalous charge.

Parliamentary Intelligence.*House of Lords, March 9th.***VIVISECTION.**

Viscount SIDMOUTH moved that an humble address be presented to Her Majesty for correspondence between the Home Office and the Society for the Protection of Animals from Vivisection, in reference to two recent instances of infringements of the law; and asked whether it would in future be a portion of the duties of the authorities at the Home Office to cause legal proceedings to be instituted in similar cases. He said he had brought these cases before the House a few days ago, when the noble lord who represented the Home Office was, unfortunately, not in his place. In one case the operation was performed on a rabbit, but without anæsthetics, and in the other case a number of animals were inoculated in the presence of a number of persons and without anæsthetics. The law had been distinctly contravened, but upon the attention of the Home Secretary being drawn to the cases, he replied, in the one case, that the licence would be withdrawn, and in the other that so long a time had elapsed since the infringement of the law that he did not feel justified in instituting proceedings. Under these circumstances he desired to know whether in future, in cases brought to the attention of the Home Office, it would be deemed its duty to institute proceedings.

Earl BROWNLOW said it certainly was a portion of the duties of the authorities at the Home Office to cause proceedings to be instituted in cases where the Vivisection Act had been infringed, and that duty had in the past been discharged. This matter was brought before the House a short time ago by the noble viscount when he himself was not in his place, and the Prime Minister then pointed out that no answer could be given, as the Home Office did not know to what cases the noble viscount referred. Since then the noble viscount had privately informed him upon this point, and it appeared that the cases to which he referred were those of Mr. Hine and Mr. Penberthy. Mr. Hine had a certificate, but clearly exceeded the powers granted by the certificate; and the Home Secretary, on having his attention called to the matter, withdrew the licence. Mr. Penberthy had not a certificate, and his explanation was that he was acting as the assistant of Professor Robertson, who had. It was clear, however, that he had infringed the law. But having regard to the fact that a considerable time had elapsed, the Home Secretary did not think it was a case in which proceedings should be instituted. There were other extenuating circumstances. Cases could be dealt with by the Home Office according to their circumstances, and it was not necessary on every occasion to take legal proceedings. The Government had no objection to lay the correspondence asked for upon the table.

The motion was agreed to.

*House of Commons, March 12th.***COW DISEASE.**

In the House of Commons on the 12th inst., in answer to Mr. Picton, Sir H. Maxwell said that some months ago Professor Brown was instructed to make an inquiry as to the existence among cows of an eruptive disease of the teats, which it was alleged in one case (the Hendon outbreak) had induced Scarlatina in man by the agency of the milk. In the course of the inquiry he availed himself of Professor Crookshank's offered assistance in working out the micro-pathology of the affection. In regard to the outbreak in Wilt-

shire, Professor Crookshank has stated that he considered the disease was Jennerian Cow-pox. Professor Crookshank has not yet furnished a report on the micro-organism of the Cow Disease. A report on the whole subject is now being prepared, and will be issued as soon as possible by the Agricultural Department.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COUNTIES VETERINARY MEDICAL ASSOCIATION,

THE General Annual Meeting of the above Association was held at the Great Western Hotel, Reading, on 24th February, F. W. Wragg, Esq., President of the Association, in the chair. There were present: Sir H. Simpson, Professor Pritchard, Messrs. Flanagan, Wheatley, and Barlow (Reading), Simpson (Maidenhead), Wilson (Berkhampstead), Drewe (Abingdon), Carter (Guildford), Walker (Oxford), Wilkins (Lambourne), Langford (Shaftesbury), Howard (Newbury), Oatway (Great Stanmore), Page, jun. (Banbury), Mellett (Henley-on-Thames), Mulvey (London), Barford (Southampton), Lepper (Aylesbury), and Kidd (Hungerford), hon. sec.

The following visitors were present: Messrs. Greaves (Manchester), Bannham (Cambridge), Wilson, jun. (Berkhampstead), and Rogers (London). The following gentlemen were unanimously elected members of the Association: Messrs. W. Hunting (Down-street, Piccadilly, London), F. Bayley (Devizes), and W. J. Roberts (Wharf-road, Paddington).

On the motion of Mr. WILSON, seconded by Mr. J. P. S. WALKER, it was unanimously resolved that a letter of condolence be sent by the secretary on behalf of the Association to the widow and family of the late Professor Robertson.

Mr. MELLETT then moved the following resolution: "That some of the surplus money in the hands of the treasurer be used in the purchase of instruments for the use of the members of the Association." After considerable discussion, it was agreed to appoint a committee to consider the subject, and report to next meeting.

The next business was to consider the election of members of Council, when letters were read from the hon. secretaries of the Lincolnshire, Norfolk and Eastern Counties Associations, respectively, asking this Association to support their nominee. After short discussion, Sir Henry Simpson gave notice that at the next meeting he would move a resolution with a view to the subject of elections to Council being put on a satisfactory basis.

The next meeting will be held at Henley-on-Thames, on 27th July.

The PRESIDENT then delivered his inaugural address, at the close of which he called attention to a number of very interesting and beautifully-mounted microscopical specimens, which had been brought for the inspection of members by Mr. Wilson, and which were much admired.

The members and friends afterwards dined together, when a very pleasant evening was spent.

H. KIDD, *Hon. Sec.*

NORTH OF ENGLAND VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this Association was held in the County Hotel, Newcastle-on-Tyne, on February 24th, 1888, the President, Mr. D. Dudgeon, in the chair.

Present:—Professors Walley; Messrs. Wm. Hunter, J. W. T. Moore, G. Elphick, W. A. Hancock, A. Hunter, E. Bennett (Army Department), C. Stephenson, and H. Hunter, Newcastle-on-Tyne; Wm. Stevenson, Whitburn; Wm. Awde, Stockton; C. S. Hunting, South Hetton; D. Macgregor, Bedlington; J. Gofton, North Shields; Wm. Wheatley, South Shields; F. R.

Stevens, Darlington; J. G. Deans, Bishop Auckland; G. M. Mitchell; and the Secretary, Sunderland.

Visitors:—Professor McFadyean; J. Aitken, Newcastle-on-Tyne; G. F. Prickett, Bedlington; W. E. Lawrence, Durham.

The minutes of the previous meeting were confirmed.

Apologies for non-attendance were received from Professors Williams, McCall, and Duguid; Messrs. H. Peele, P. Snaith, W. F. Mulvey, T. Greaves, J. D. Barford, T. Jack, G. A. Banham, A. C. Cope Donald, J. E. Peele, A. Leather, R. Brydon, C. Sheather, W. W. Smart, J. B. Nisbett, G. Farrow, junr., C. Gresty; Drs. Fleming, Armstrong, and Harris.

Mr. Deans (Bishop Auckland) was unanimously elected a member of the Association.

The SECRETARY nominated Mr. H. Gelsthorpe, of Darlington, for election as a member.

On the motion of Mr. Elphick, seconded by Mr. C. S. Hunting, Mr. Bennett (Army Department) was unanimously elected an Honorary Associate during his stay in Newcastle.

The President, Vice-Presidents (Messrs. H. Hunter and J. Gofton), Messrs. Moore, Elphick, and the Secretary were elected the Committee to revise the rules of the Association.

The PRESIDENT then referred to the death of Professor Robertson. He said he was a man of great and varied ability, a thorough worker, and everyone would regret his untimely end. It was only a short time since he was there, and read a most interesting paper. In last July we had the honour of entertaining him at our annual dinner. He thought it was the duty of the Society to record on the minutes their high appreciation of him.

Mr. STEPHENSON fully endorsed what had been said by the President with regard to Prof. Robertson, and could not adequately express his feeling in the loss they had sustained. He was one of his oldest friends in the profession, and they were alike in having commenced life in the shoeing forge.

It was proposed and carried unanimously, that a letter of condolence be sent to Mrs. Robertson.

The PRESIDENT then delivered his annual address. He said:—

MR. VICE-PRESIDENT AND GENTLEMEN,—I have to thank you most heartily for having again elected me President. It is the fifth time you have conferred that honour upon me. I can assure you that I consider it no light compliment thus to enjoy the confidence and esteem of my brother professionals. I think you will agree with me that the chief aim of this Society is the advancement of veterinary science, and this will be best accomplished by each member regularly attending the meetings, taking part in the discussions, and contributing papers when called upon. I may say that this Association may lay claim to having done some good work in the past, and I hope that you will press on to do still more in the future. It was at one of our meetings that it was first suggested that the election of members of Council should be settled by voting papers sent to every member of the Royal College of Veterinary Surgeons, rather than by personal voting at the annual meeting; it was several years before this suggestion bore fruit, but now it has been adopted, and has proved a great boon to the profession. At our meeting last May we passed several resolutions regarding the examiners and the examinations, and I believe the Council has adopted the major part of them; so that we may at least lay claim to have been amongst the pioneers of important reforms. There is also the social advantages of these gatherings, the amount of good feeling they produce among the members, and friendships have been formed that will be lasting as life itself. I was sorry to see in the *Chronicle* on Thursday that the Scotch Metropolitan Society had been broken up. I know nothing

of the circumstances as to the breaking up, but am sorry such a society has gone. I am old enough to remember the disruption of the kirk in Scotland. The discontented ministers came out in a body and formed a new church, and the other two churches were now perhaps the most prosperous churches in Scotland. I hope, too, that two good societies will be formed in the place of the Scotch Metropolitan, and that very soon the members of each society will attend each other's meetings and do what they can for one another. One or two matters I should like to notice. With regard to the education of the student, I trust that the recent alterations that have been made in the curriculum, the additional members put on the examining board, and the increased facilities for acquiring practical knowledge, will add to the usefulness and efficiency of those about to enter our profession. Milk contamination had been brought prominently before agriculturists and the public by an outbreak of cow disease at Hendon. It was endeavoured to show in that case that the produce of the cow had led to Scarlatina in the human system. It would require, I think, a great stretch of the imagination to arrive at the conclusion that a cow which had no Scarlatina could introduce it into the human being. Government had intervened and their officers had tried their skill in the matter. It was important, too, that such a matter should be settled; for if the public became imbued with the idea that it was possible to get such a disease by taking milk, it would shatter the lifelong faith the people had in the nutriment of that fluid. I believe that the investigations which have taken place at the instance of the Veterinary Department showed that, if the milk was contaminated, it was contaminated after it had been taken from the cow. Talking with an old professional friend the other day, he assured me that there is a great future in store for the profession. This I believe is true, but you must not expect it from Government, or Acts of Parliament, or from any source outside ourselves. It is only by patient, persevering, plodding research, and by straightforward, honourable conduct that a man can rise in his profession, and it seems to me that the study of microbes and bacteria must be very carefully gone into. In conclusion, I would urge upon all, and especially upon the young, members when they begin practice, that in all their actions they must look not only to their own advancement, but also to the honour and advancement of their profession.

A most interesting paper was read by Professor WALLEY on "The Effects of Lightning, Fire, Smoke, and Steam upon Animals."

A discussion followed, in which Messrs. ELPHICK, H. HUNTER, MCGREGOR, STEVENS, MITCHELL, the PRESIDENT, and Professor MCFADYEAN took part. Votes of thanks to Professor Walley and the President brought the meeting to a close.

In the evening the annual dinner took place. The President (Mr. D. Dudgeon) occupied the chair, and Mr. H. Hunter filled the vice-chair. After the tables were cleared a short toast list was proceeded with. The usual loyal and patriotic toasts having been proposed and duly honoured,

Mr. H. HUNTER proposed "The Royal College of Veterinary Surgeons," with which he coupled the name of Professor Walley. He was glad that the College had shown itself amenable to good advice and to reason; and he was more glad that they in that Society were the authors of the resolutions which the Royal College had adopted to a great extent, and he thought that after adopting the other recommendations and resolutions the College would be pretty well as good as it ought to be.

Professor WALLEY responded briefly, and pointed out that considerable good had resulted to the Royal College from the effects of outside agitation.

Professor WALLEY proposed "The North of England Veterinary Medical Association." He said it was a good many years since he first came there as

their guest, yet he saw now, as then, that perfect unanimity prevailed amongst them. They had done, as was said by the President in the afternoon, a good work in the past, and he hoped they would continue to do so in the future. Personally, he was not in favour of veterinary associations taking upon themselves to discuss at any very great length what he might call politics. He thought the principal function of the Society, so far as actual work was concerned, should be the consideration of scientific subjects. He was sorry that in wishing them to go on with unanimity he could not take the lesson further north; but that had little to do with their association, which he hoped would continue to increase, not only in numbers, but in usefulness. With the toast he begged to couple the names of Mr. Dudgeon and Mr. H. Hunter.

The PRESIDENT, in response, said that, without boasting, their Society had certainly had a very fair measure of success. True, there was at one time a little apathy, but, like giants refreshed with wine, they woke up, and since then he thought they had been more vigorous than before. He was sorry to hear of the split in the North, involving the disruption of the Scotch Metropolitan Society; yet very possibly two societies might arise from the fall of the first, and he hoped in a very short time they would be able to interchange mutual friendliness. They had reason to look for the success of their Society in the future, though that would depend upon the members themselves.

Mr. H. HUNTER also responded.

The PRESIDENT gave the toast, "The Veterinary Schools."

Professor MCFADYEAN, in responding, said he thought he might at least say that the schools were about as good as could be got for the money; but they were still very far from being all that they ought to be. It was not very difficult to find the reason. In that matter-of-fact country they would not get anybody to work for nothing; and they would not get eminent men to teach veterinary subjects for £200 per year. At the present time the schools were attempting to teach far too much; that was to say, the curriculum in consideration of the time allowed for study was overloaded.

Mr. MOORE, in proposing "The Medical Profession," referred to the case at Hendon, where Scarlatina was attributed to the consumption of cow's milk. He held that when in such cases careful investigation was held, the result was to prove the total immunity of the cows from disease. Until such time as the medical profession united with the veterinary profession to conjointly pursue investigation into the question of transmissibility of disease from animals to men, there would always be an unsatisfactory state of affairs. There was, he felt, in the medical profession too much proneness to usurp the duties of the veterinary profession.

Professor MCFADYEAN responded. He said there might be a pardonable feeling of irritation on the part of veterinary surgeons when they looked at the attitude taken up by medical men in the past. He believed, however, that was a thing of the past, and was to be explained more by ignorance of the medical profession than by the ignorance of the veterinary profession. It arose from the ignorance of the medical profession of the diseases of the lower animals, and ignorance of their important bearing on health. He had been deputed by the Privy Council to make investigations with a view of ascertaining if there was any warrant for saying that the disease Scarlatina could be imported from a cow to a human system. His experiments were not yet completed, but he had not yet seen anything to lead him to believe that an epidemic of Scarlatina was traceable from the cow. In conclusion, he agreed with Mr. Moore that the professions could work hand in hand without encroaching on the province of each other.

Other toasts were proposed, and songs were sung at intervals, a most enjoyable evening being spent.

G. R. DUDGEON, Hon. Sec.

BORDER COUNTIES VETERINARY MEDICAL SOCIETY.

A GENERAL meeting and annual dinner of the above Society was held at the Bush Hotel, Carlisle, on the 27th of January, 1888, with J. Bell, Esq., Carlisle, President for the year, in the chair.

The members present were Messrs. McIntosh, Dumfries; Dawson, Carlisle; Pears, Penrith; Potts, Wigton; Bell (jun.), Carlisle; Tallentire, Skelton; Little, Abbey Town; Carruthers, Brampton; Chalmers, Annan; Hoadley, Eston; Young, Cockermouth; Prof. Williams, Edinburgh; Messrs. Donald, Wigton; Thompson, Aspatria; Carlisle, Carlisle; Howe, Keswick; Crondace, Haltwhistle; Bell, Haltwhistle; F. Armstrong, Penrith; Coates, Brampton; McCauly, Longtown; Chalmers, Moffat; Troughear, Hesketh; Clough, Whitehaven; Prof. Lewis, Edinburgh; Prof. J. Armstrong, Penrith (Hon. Sec.).

Visitors were Messrs. Steel, Shore, and Dr. Webb.

Apologies were read from all the members not present.

The Secretary then read the minutes of the previous meeting, which were confirmed.

The SECRETARY moved that the following gentlemen be elected members of this Society: Messrs. F. Armstrong, Penrith; Anderson, Hexham; Troughear, High Hesketh; Chalmers, Moffat; and Bell, Haltwhistle. Mr. PEARS seconded, and they were unanimously elected.

Dr. Webb, Principal of the Aspatria Agricultural College, promised to read a paper at next meeting.

Mr. BELL, President for the year, read his inaugural address as follows:—

GENTLEMEN,—I must, in the first place, thank you for the honour you have done me in electing me as your President for the year 1888. The honour is one which I appreciate all the more because it has been conferred upon me by those who are actively engaged in the same profession with myself, and with many of whom I have had opportunities more or less frequent, of coming into contact, not only at meetings of our Association, but also in other capacities. I shall ever regard it as no mean privilege to be able to say that the Border Counties Veterinary Medical Society thought me worthy to be one of its earliest Presidents; and to the Society itself I take this opportunity of wishing it continued prosperity, at the same time expressing a hope that the gatherings under its auspices may result in advantage to every individual member. It is proverbial that "doctors differ." I am revealing no professional secret when I say that even veterinary surgeons have sometimes been known to differ. It is, I take it, one of the objects of our meeting to ascertain precisely in what we differ, and to state the grounds of our differences. In the clash of conflicting opinions, the truth may be reached, and a light, true as well as new, shed on many knotty points. It has been usual for the President at the opening meeting of his year of office to deliver an inaugural address, and I am conservative enough to have no desire to depart from what may now be regarded as the established usage. There are a multiplicity of subjects upon which one might have prepared an address; but while casting about for some suitable topic, I kept in mind the fact that this is the Jubilee year of Her Gracious Majesty Queen Victoria, and I thought I could hardly do better than take a brief retrospect of the progress of science, and more especially of veterinary science, during the last fifty years.

In many respects these fifty years have witnessed great changes. When the Queen came to the throne in 1837, railway locomotion was in its infancy. Although not an old man yet, I myself travelled by the very first passenger train that ever steamed out of Carlisle station. I must, however, frankly admit that I have not the slightest recollection of the interesting event. Now, in the present year, Carlisle is the focus of seven great railways, and in the

country at large about 20,000 miles of rail have been laid at a cost of more than eight hundred millions. In the same year (1837) the first electric telegraph was constructed by Professor Wheatstone on the London and Blackwall Railway. It was then regarded as little more than a scientific curiosity. Now almost the whole civilised world enjoys the benefit of electric communication, and the "telegram" has become an important factor in our daily life. Before Her Majesty had completed her first year of rule, the Atlantic had been crossed for the first time by a steamer. The Great Western Mail Packet, when it sailed into New York harbour in June, 1838, practically solved the great problem of ocean steam navigation, and brought Europe and America within a few days' sail of each other. Science has made great progress in other directions, over which one might like to linger did time permit; but I hasten on to notice something of what it has accomplished in the healing heart, and more particularly in our own department.

It may perhaps be doubted whether science, in some of its results, has added materially to the sum total of happiness. Is it not possible—nay, probable—that railway travelling, and the "hurry-scurry" incidental to railway journeys, may have something to do with the extreme prevalence in these days of some forms of nervous diseases? The wearied "veterinary" who has just got his feet into his slippers after a hard day's work does not bless the telegraph boy who brings a message which necessitates his immediate taking a long drive to visit a "patient." The British farmer does not much appreciate the great steamships which enter the Mersey laden with the wheat grown in the fertile valleys of North America, or those with cargoes of New Zealand sheep in their holds. But how different it is when science comes and places her choicest treasures at the disposal of the healing art! Then one feels assured that the results can be nothing but beneficent, and that no living thing will suffer hurt. Let us think for a few minutes of what science generally has done for the medical and veterinary man during the last half-century. Time will only permit me to refer to some of the more striking facts. If it had been said fifty years ago that before the end of the century the healing art would find in optical science a most efficient coadjutor, it would have sounded incredible. Yet so it is. For purposes of diagnosis the microscope is now absolutely invaluable. In some diseases, as has been remarked, "its searching eye finds out death at a glance." Sometimes, for instance, when the surgeon has removed a tumour, certain appearances in the lens show the presence of fatal cancer. But the microscope not only detects disease; in all researches into the germ theory of disease it must be in almost constant use. If the germ theory be established, if it can be shown that the most deadly diseases which afflict man and beast are distinctly traceable to those germs, half the battle with disease is won; and to the microscope, in the hands of patient and observant men, will belong the credit of accomplishing what may well be regarded as one of the greatest feats of modern science. When we contemplate the myriads of lives that have been lost for generations by such diseases as Consumption and Cholera, and when the microscopist asks us to peer through his instrument and see for ourselves the minute organisms that have worked such fell havoc, we cannot but feel that this revelation is truly one of the scientific marvels of the age. As Beale tells us, he has in favourable circumstances, when working with the fiftieth of an inch focus object-glass, distinctly seen corpuscular aggregations in pus, with dimensions not exceeding in breadth the hundred-thousandth part of an inch, presenting all the distinctive characters of bioplastic life, and throwing off continually subordinate spherular and corpuscular germs that were just even with those advanced powers of the microscope upon the margin of invisibility. Besides the microscope, the physician in these days is also armed with the stethoscope, the laryngoscope, the ophthalmoscope, the

speculum, and the thermometer; but to these time will not permit me to refer. Another of the sciences—chemistry—has, during the Queen's reign, lent material aid to surgery and medicine. It is just a little more than forty years since chloroform was first used as an anæsthetic. The first instance of an operation under chloroform occurred in Edinburgh on the 15th November, 1847. So says Sir James Simpson, who may be called its discoverer, and the date is surely worth putting on record as marking what one has called the greatest of all discoveries in modern times—the application of chloroform in the assuagement of human suffering. Not only has chloroform diminished human suffering, and thereby proved (to quote the words of a thoughtful writer) "God's best gift to His suffering children," but it has rendered many difficult operations possible which could not previously have been attempted. I mean operations of a tedious character, such as excision of the jaw or tongue, in which otherwise the suffering would have been too prolonged. Within a quarter of a century of the discovery of chloroform as an anæsthetic, its use had become so general that one Edinburgh manufactory alone turned out "nearly three million doses per annum"—evidence, says Dr. Simpson, "to what a great extent the practice is now carried of wrapping men, women, and children in a painless sleep during some of the most trying moments and hours of human existence, and especially when our frail brother man is laid upon the operating table and subjected to the torture of the surgeon's knives and scalpels, his saws and his cauteries." Well was it said of Simpson:—

"Great in his art, and peerless in resource,
He strove the fiend of human pain to quell;
Nor ever champion dared so bold a course
With truer heart or weapons proved so well."

But man is not the only creature who profited by the use of chloroform. Very soon after its introduction it was found that it could be applied as beneficently to the lower animals, and I need not tell you how it has been used as an alleviator of pain, especially in regard to the horse. I suppose no veterinary surgeon would think of performing any serious or important operation without first administering chloroform. In this way the horse has become a partaker in the benefits of the modern scientific discoveries of its master—man.

The researches—let me say, the remarkable researches—into the germ theory of disease, which have occupied so large a share of attention during the last twelve or fifteen years, would of themselves have made this reign a notable one in the annals of medical and veterinary science. The germ theory (to which I have already made a brief reference in connection with microscopical research) is now something more than a theory. By common consent (to use the words of Professor Axe) "it is now admitted that specific diseases are the outcome of a struggle between animal and bacterial life. Specific diseases," he says, "arise out of living entities, or forms of a bacterial nature, each disease having its particular parasite—in some cases limited in its zoological range to particular species, in others extending to many. This points to the conclusion that each species of microbe requires for its propagation, growth, and development a peculiar and suitable soil, containing all the necessary organic and inorganic elements of nutrition, as well as a suitable environment and temperature." So far Professor Axe. My esteemed friend, Professor Williams, says on the same subject, and I have much pleasure in quoting his words, because they state, in a few concise statements, the results of his careful observations: "We may often find in outbreaks of Splenic Fever that we can trace no contagion whatever. There has been no Splenic Fever in that district within the memory of man. How has it come, then? If (he goes on to say) we bear in mind that these bacilli

may at any time be virulent, and at another time not virulent, I think we can clear up the mystery. A bacillus is developed during certain changes in hay-tea and brewers' grains. This bacillus, to all appearance, is the same as the bacillus of Splenic Fever, but the bacillus of hay-tea has no virulent effect—in fact, animals are eating every day of their lives millions of these very bacilli. But some German experimenters have proved to demonstration that this innocent bacillus will, under certain conditions, become virulent. By cultivation in blood serum it attains all the virulence of bacillus anthracis, and then inoculation with cultivated bacilli will produce all the symptoms of death from Splenic Fever. You have here, I think, a key to the fact of the so-called spontaneous outbreak of this disease. Owing to some peculiar condition of fermentation, the bacillus of hay-tea, and cotton-cakes, and so on will become altered; and what is the consequence? Very often you will find that the feeding of the animals upon the impaired cotton-cake will induce Splenic Fever. How has this bacillus got there? Simply owing, in my opinion, to the transformation of the innocuous bacillus subtilis into the virulent bacillus anthracis, owing to its having propagated for generation after generation in this cake. A recognition of these will enable us to throw a light upon the so-called spontaneous eruption of these diseases. That a change takes place is proved by the cultivation of Pasteur. It is very easy to cultivate downwards, and by cultivating downwards the bacillus anthracis becomes almost innocuous, and the facts which have been established by Pasteur himself are sufficient to prove to any impartial mind that by attenuating the virus you alter the character altogether—it loses its virulence. Cultivate it, again, within an animal body, it regains its virulence. Hence we have a key to the outbreak of so-called contagious diseases in this country. "The key" thus supplied seems to me to solve many of the different theories of the question as to the origin of contagious diseases. It is, however, a question in which scientific research is still being continued, and the next few years may witness a great advance in our knowledge of the origin of diseases.

The question of inoculation as a preventive of Pleuro-pneumonia is closely connected with the germ theory, and has lately engaged so much of the attention of members of the veterinary profession that I may be excused for saying a few words on the subject. I may remind you that in 1880 Willems drew attention to the special germ corpuscle or microbium of Pleuro-pneumonia, stating that he had succeeded in obtaining it from the air of an infected stable. In the same year (I am now summarising part of the able paper of Professor Walley, read at the meeting of the National Veterinary Association in 1885) the Louvain professors, Verriers and Bruylauts, described a Pleuro-pneumonia microbium, stating that they had cultivated it and experimented with it by inoculation, with the result that the inoculative lesions were materially modified. It is almost beyond doubt that Pleuro-pneumonia is due to a specific virus, which is endowed with great vitality. Some years since Dr. Fleming arrived at the conclusion that the evidence in favour of inoculation as a preventive of the disease was overwhelming. Mr. Rutherford's personal experiences are remarkable, and clearly tend to show that inoculation is a safe and certain remedy. "My first attempt," he says, "was on a large byre, which now contains sixty or seventy animals, but at that time reduced to ten or eleven, all more or less suffering from the disease. My friend offered to purchase fresh stock, and I was to inoculate them, and let the operation stand or fall by the result. The result was that those put in passed through and remained healthy in the infected byre until they were finally sold to the butcher; the others all died, and, as in this instance, so in hundreds of others." It is, however, suggested that the disease is likely to be communicated by inoculated animals. Against this idea there is the assurance of Mr. Rutherford, speaking with ample experience, that he did

not know a single instance where an inoculated animal has in any wise become a centre of contagion, always provided—and the proviso is most important—that at the time of inoculation they were healthy. There is another important requisite for the success of inoculation in Pleuro, as for vaccination in Small-pox. The virus itself must be healthy. I am well aware that there are some practical difficulties in the way of carrying out a general system of inoculation, but these need not concern us now. What I wish to emphasise is the fact that, as the result of scientific observation and discovery during the past half-century, the members of our profession have had placed in their hands what in all likelihood may prove to be a means of saving much valuable stock. Another striking feature in the reign of Queen Victoria should not pass unnoticed. During the last half-century, and more especially during the last quarter of a century, a professional interest has been awakened in the whole lower creation. Such an interest, perhaps, has not been shown in any previous age of the world's history. The old Roman said, "Whatever concerns man concerns me." The modern Britain goes further still, and says, "Whatever concerns animals of any kind concerns me." The wise man wrote, 3,000 years ago, that "the righteous man regardeth the life of his beast." The modern legislator goes further, and says that the life of the beast shall be regarded by everybody. The Queen herself is patron of the Society for the Prevention of Cruelty to Animals; and although the operations of the officials of the Society may not always be characterised by fine discretion, it is unquestioned that the intentions of its founders and supporters are excellent. Again, the great newspapers of the day did not think it beneath their dignity to write leading articles on the question of bearing-reins; and the still more vexed question of vivisection has had much more printers' ink shed over it, and has been made the subject of penal enactments. On this question of vivisection it is not necessary on this occasion to refer at length. I may, however, say that I entirely agree with the late illustrious Dr. Darwin, whose care for the lower animals was so great that it is recorded of him, in his recently-published Biography, that he returned one day from his walk pale and faint from having seen a horse ill-used, and from the agitation of remonstrating with the man. Darwin expressed the deliberate opinion that vivisection was justifiable for real investigations of physiology, but not for "mere damnable and detestable curiosity." "He was," says his son, "strongly of opinion that to prohibit experiments on living animals would be to put a stop to the knowledge of, and the remedies for, pain and disease." On the other hand, he would gladly punish any one who operated on an animal not rendered insensible, if the experiment made this possible. There is yet another point to be kept in mind. As the result of vivisection, animals will themselves derive benefit. Look, for instance, at Pasteur's results in modifying the germs of the most malignant diseases, from which, as it so happens, "animals will, in the first place, receive more relief than man." Again, let it be remembered how many lives and what a fearful amount of suffering have been saved by the knowledge gained of parasite worms, through the experiments of Vichow and others, on living animals.

What, however, I am now most anxious to point out is that, whatever side may be taken in the great controversy on vivisection, the very fact that it has raged with such fury affords proof of the profound interest taken in the lower animals. The veterinary surgeons of the United Kingdom have entrusted to their care, as medical advisers, something like three million horses, eleven million cattle, thirty million sheep, and four million pigs. The aggregate value of these it would not be easy to state, but a destruction or depreciation of ten per cent. of any of them would spell "ruin" for their owners. Even in ordinary times and under ordinary conditions the annual

loss of cattle and sheep caused by infectious diseases amounts to a big item; but it has happened within the last half-century, and may happen again, that some contagious disease may break out amongst our herds on such a scale as would amount to a national disaster. Those of us who are still in middle life can remember well the grievous losses entailed in this and many other districts of the country by the outbreak of Rinderpest in 1865 and 1866. An eminent authority tells us that in those two years the loss of cattle in Great Britain from the disease was about 233,000 head, the probable value of which you can calculate for yourselves. In the six years ending with 1860, it is calculated that in the United Kingdom more than a million herd of cattle died from Pleuro-pneumonia, the value of which would be something like twelve million pounds sterling.

It will be asked, What is the good of veterinary science if it cannot even now, near the end of the nineteenth century, prevent cattle falling a prey to dire diseases? With increased skill and greater scientific knowledge, the veterinary surgeon has to deal now with a new order of things. In former days the Murrain, or Cattle Plague, was chiefly introduced into countries by means of war. If I am right as to date, it was in 1870 the German army which invaded France introduced Foot-and-mouth Disease into it. Forty or fifty years ago the importation of living cattle and living sheep was absolutely prohibited. There was therefore comparatively little risk of the spread of infection from that source. Now, however, we are annually importing about 400,000 head of living cattle, and about a million living sheep. As we all know, any one of these imported cattle may any day become a centre of infection on its arrival here, and spread disease right and left, with such results as we have witnessed too often. Thus the problem now to be solved by veterinary science is infinitely more difficult than it was fifty years ago, and so much greater will be the honour of the man, or rather of the men, by whom it is solved.

To ascertain the stage which veterinary sugeons had reached fifty years ago, one should refer to the professional publications of that period. Here, for instance, in the *Veterinarian* for 1835, I find a Mr. B. consulting the editor as to whether or not he had properly treated a mare.

When he saw her on the 12th of October, he found her labouring under spasms of the intestines, which he concluded was caused by her having been partly fed on new straw. He treated her thus, as stated in his own words:—

“I abstracted blood, three pints and a-half (Scotch, seven quarts), gave three drachms of Barbadoes aloes in solution, and two ounces of tincture of opium. I fomented her belly, and threw up clysters, by which means the spasms became relaxed and the pain abated.” Next day the mare was still suffering. He again abstracted blood, three and a-half pints (Scotch); gave five drachms of Barbadoes aloes in solution, fomented her belly, back-raked her, and threw up clysters very frequently. Gave afterwards, at three different times, one drachm of aloes in two quarts of tepid water. About 7 p.m. on the third day she was seized with a rigour or cold fit, during which he gave her two drachms of sweet spirit of nitre, applied friction to her body generally, and bandaged her legs, which were clay-cold; but a hot fit speedily succeeded, with laborious breathing, and the pulse rose to 80°, but was small. The labour of breathing soon went off, and the pulse rather increased. “I gave her two drachms of tartar emetic, and three drachms of nitre.” Then, on the fourth day, the lungs appeared to be seriously affected. “I abstracted blood, one pint (Scotch, two quarts), blistered her sides, bandaged her legs, hooded her head, and endeavoured, as far as possible, to equalise the circulation. I then gave one drachm and a-half of digitalis, with two drachms of nitre. On the fifth day she appeared easier, but weak and without appetite. On the sixth day she was extremely weak; and on the seventh day she died. Eight pints (Scotch), or

nearly sixteen quarts (English), of blood were taken away during the six days' illness, and at each vivisection. I held my finger on the artery during the flowing of blood, watching the effect produced." The owner of the mare stated that Mr. B. had bled his mare to death, and Mr. B. naturally wished to know what the editor of the *Veterinarian* thought of it. The editor (whose initial "D" will be readily recognised by many old pupils) says: "I have no hesitation in saying that the patient referred to did not suffer from the bleeding; on the contrary, had I been consulted, I should have been much inclined to have taken away more blood. I doubt whether any treatment could have saved the mare." I have referred to this case in some detail because it may be taken as representative of the drastic remedies to which the last generation of veterinaries resorted. I refer to it for another reason—namely, to point out the possibility that, while the remedy of blood-letting may have been abused in former times, both as regards man and beast, it may be now too much neglected. My townsman, Dr. McDougall, recently contributed to the American journal of the medical sciences a remarkably able article on the remedial value of blood-letting. In this he points out that, when we recognise in blood-letting the power to modify the distribution of blood and to diminish pressure within the vascular system, then we are moving on such lines as are well fitted to guide us in its employment. That it does act as a derivative, that it is a powerful though dangerous sedative, and its employment facilitates the action of other remedies, is all possible. And although I believe that few would incline to employ it for such ends solely, its possession of such potentialities may render it of wider service than we anticipate when we use it. Harvey quoted these suggestive sentiments. I leave the question for the consideration of each of you.

So far as regards the systematic teaching of veterinary science, the present reign marks a remarkable advance. The farriers of the olden time were many of them sagacious men, and, so far as their knowledge went, they managed, in a rough and ready way, to render valuable aid to the stock-keeper. But no one, I hope, would dream for a moment of comparing them with the thoroughly trained veterinary surgeon of the present day. It is impossible to over-estimate the advantages which have been derived by veterinary practitioners, from the fact that during the last fifty years they have been trained in colleges and by men who have devoted their lives to the study of the science. It is almost a hundred years since the Royal Veterinary College of London was established, with St. Bel as its first professor. He, however, did not live long to retain the position, and he was succeeded in 1794 by Edward Coleman, who was Principal till his death in July, 1838. Few men have done so much for the profession as Coleman. In his time the College turned out many able men, including Field, Simonds, Gloag, Mayer, and Dick. In this connection it is interesting to note that among the four students who obtained their diplomas from the College on the 24th of April, 1837—just two months before the Queen's Accession—I observe the name of Mr. Joseph Carlisle, my esteemed partner, whom I may describe as the Nestor of veterinaries in the Border Counties, and who is now an honoured member of our Association. If you will pardon a slight digression, I may mention that shortly before that period there had been an Influenza among horses, and I find that in the *Veterinarian* of October, 1837, Mr. Carlisle contributes a useful article on the treatment of that disease. It was in 1844 that the Queen authorised the incorporation of the Royal College of Veterinary Surgeons, and declared and granted that the veterinary art as practiced by the members "shall be henceforth deemed and taken to be recognised as a profession"—a very distinct step in advance. A generation later—namely, in 1881—yet another step was taken towards raising the status of the profession. There were then passed, largely through the exer-

tions of Dr. Fleming, the Veterinary Surgeons Act, rendering it penal to assume the title of veterinary surgeon, or in any way to lead the public to assume that any but a member of the Royal College of Veterinary Surgeons, or practitioner recognised by it, is qualified to practice veterinary surgery or any branch of it.

No record of the progress of veterinary science would be complete which did not contain some reference to the work of William Dick, a pupil of Coleman's, who more than sixty years ago became the Professor at Clyde Street College, in Edinburgh, where, during the forty years he held that position, he turned out a host of able veterinarians. It has been noted as a significant fact that at the end of the year 1887 the principals of the three British schools, of the Army, of the two Canadian schools, and the President of the Royal College of Veterinary Surgeons, were "Dick's" men. And what of the future? What will the next half-century bring forth? Much has been done in the past; will more be done in the years to come? When we think of the rapid progress made by medical science in all departments during the last five decades; when we think of how much has been accomplished by Pasteur and Koch in other countries, and by Klein and Dr. Fleming and Williams, and a host of others in our own; when we think of the fact that in many cases the disease-producing germs have been traced; when we think of these things, we cannot conclude that science has reached its last and greatest achievement. On the contrary, we must feel that, with a continuance of patient investigation, with many eyes and many minds on the constant outlook for new facts and new methods, the next fifty years will see greater results than the last fifty. The time may come when, by the application of some simple prophylactic, the microbe itself may be robbed of its terrors. The young members of this Society may render material help in that direction. True, many may not be able to spend months at the microscope, watching the development of bacterial life; many may not be able, like Pasteur, to enter upon elaborate experiments for the attenuation of virus; but every one may contribute from his own observation and experiences some facts which may become all-important in future scientific research. There are other points on which I should have liked to have touched, but I feel I have already trespassed too much upon your patience. To sum up, let me say that never was it more important than now that the members of our profession should keep pace with the progress of science. On economical grounds alone, it is essential that the cattle and sheep of the farmer should, if possible, be prevented falling a prey to disease. Every head of cattle and sheep saved is an absolute saving to the nation. Let every one of us keep our eyes open for new facts and our minds open for new truths. Remember that we owe vaccination to the circumstance that Jenner accidentally heard it observed that dairymaids were not liable to Small-pox. Let nothing be thrown aside merely because it is old; let nothing be rejected merely because it is new. Take as your motto the three words—"Prove all things."

Professor WILLIAMS proposed a vote of thanks to the President for his very able paper. Mr. THOMPSON seconded the motion, which was carried unanimously.

Professor WILLIAMS then read a paper on "Quarter-ill," and inoculation as a preventive, which was very interesting and instructive, and was the means of eliciting an interesting discussion, in which most of the gentlemen present took part.

The CHAIRMAN then proposed a vote of thanks to Professor Williams for bringing before them that day such a very interesting paper, and kindly thanked him and Professor Lewis for attending the meeting. Mr. CARLISLE seconded the proposal, which was carried unanimously.

Mr. MACINTOSH proposed a vote of thanks to the Chairman, which, being seconded by Mr. DONALD, was also carried unanimously. The meeting then terminated.

The members and their friends then adjourned to dinner.

Amongst the friends present were Mr. Crowther (Mayor of Carlisle), Messrs. Watt, Ferguson, Dixon, Wheatley, Dr. McDonald, and others.

Dinner over, the usual loyal and customary toasts were given and responded to, and a very enjoyable and pleasant evening was spent.

JOHN ARMSTRONG, *Hon. Sec.*

NORFOLK AND EASTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE half-yearly meeting of the above Society was held at the Bell Hotel, Norwich, on February 18th.

Present:—John Hammond, Esq., M.R.C.V.S., Bale, President, in the chair. Messrs. G. A. Banham, Cambridge; Thomas Greaves, Manchester; James Gooch, Holt; F. Golden, Marsham; R. Howard, Thetford; G. C. Hunting, Stalham; Kitchen, Norwich; Kidd; H. Newson, Beccles; J. B. Martin, Rochester; J. D. Overed, Blofield; Pollock, Norwich; A. H. Santy, Norwich; William Shipley, Yarmouth; S. Smith, Lowestoft; James Simpson, Maidenhead; F. C. Wragg, London, and the Secretary.

Letters of apology regretting their inability to attend the meeting were read from several members of the profession, including Dr. Fleming, Sir H. L. Simpson, Professor Walley, Professor Axe, etc.

After confirming the minutes of last meeting and receiving Treasurer's report, the election of officers for the ensuing year was proceeded with.

John Hammond, Esq., of Bale, Norfolk, was unanimously chosen President, and, taking the chair vacated by ex-president William Shipley, Esq., Great Yarmouth, conducted the meeting.

Messrs. William Shipley, R. Howard, and James Gooch were elected Vice chairmen.

The Hon. Secretary and Treasurer, Mr. R. S. Barcham, was re-elected.

Mr. BANHAM proposed that a vote of thanks be accorded to Mr. Shipley for the able manner in which he had carried out the duties of President during the past year, and for the great kindness and courtesy he had shown to all of them.—Carried unanimously.

Mr. Kitchen, of Norwich, Mr. Pollock, of Norwich, and Mr. James Simpson, of Maidenhead, were unanimously elected members of this Society.

The next place of meeting was arranged to be at Cambridge next July.

The Secretary was instructed to forward letters to Mrs. Robertson, Mrs. Carter, and Mrs. Wright, expressing the deepest sympathy of the members of this Society with them, in their recent bereavements.

The PRESIDENT next called on Mr. Wragg to read his paper "Remarks on Examination of Horses as to Soundness."

Mr. WRAGG then gave the members a short, lucid, practical essay, detailing those abnormalities which he considered constituted unsoundness. The best definition in his opinion for unsoundness was, "Anything which does at the present, or is likely to at some reasonable and future time, interfere with the usefulness of the animal." *Spavins, Curbs, Ring-bones, Side-bones, Splints* in whatever position found, etc., etc. were described, as constituting unsoundness; also *Vice*, if it interfered with the usefulness of the animal.

Indications of having been trephined, scars from having been operated on for Poll-evil, or Fistula Withers, he considered quite sufficient to reject a horse for, because, although at the present time healed, they may at any time have a fresh outbreak. After enumerating and describing many other abnormalities,

some of them with *post-mortem* specimens, which he thought constituted unsoundness legally, Mr. Wragg concluded his highly interesting and instructive paper by exhorting the members to use the utmost care in their examinations, pointing out that not only are our clients frequently wholly dependent on the opinion which we give, but that we as veterinary surgeons are legally responsible for any defects which we overlook, even, in his opinion, to those occult diseases which may be scarcely detectable at the time.

The discussion which followed was both lengthy and animated. It was opened by

Mr. MARTIN, who stated that, although legally he agreed with most of what Mr. Wragg had said, practically he considered it impossible to follow. If you reject every case of Splint, you would never pass a horse at all. He never rejected an animal for Splint, unless it was in a position to cause lameness at the time, or was likely to when put to work. Atrophy of the spinatus muscle, unless it interfered with the use of the leg, he did not consider constituted unsoundness practically, and although we ought to point it out to the purchaser, he thought we might confidently recommend the purchase of the horse. As to Side-bones, although legally unsound, he had seen many cases where animals so affected had done a great deal of work on the stones of London without any ill effects. Laminitis he considered one of the most objectionable forms of unsoundness, especially for city work. Curbs, when once formed, he considered of very little consequence.

Mr. GREAVES, after referring to the paper in high terms of praise, gave the result of his experience for over twenty years amongst horses in Manchester. Side-bones (unless excessively developed) in a foot which was good and strong, he considered of very little consequence; he had advised the acceptance of such animals in a great number of cases, and very seldom had he to regret that advice. Very few went lame, and he had watched some of them for ten years; and although running on the stones of Manchester with shoes calked both heels and toes, the Side-bone had remained *in statu quo*. The horses which he never under any circumstances passed were those with thin low heels and thin flat soles; they would not stand town work for three months. Spavins, if not very large, and did not cause lameness, he did not consider of much importance, practically, in the horse. Cataract, although pointing out to purchaser, he never rejected in cart-horse. If in Manchester they threw out every horse that was technically unsound, they would never get half enough to meet the demand.

Mr. JAS. SIMPSON said that his experience of Side-bones was, that in the majority of cases they caused lameness, sooner or later. Split pastern, if not causing lameness, he did not consider unsoundness. He did not think that we were legally responsible for the existence of internal diseases not detectable during life.

Mr. SANTY described a peculiar form of unsoundness which he had frequently met with in cart-horses, viz., disease of the fifth inferior molar teeth. He considered it to be hereditary. Odd feet he had frequently seen produce lameness; he always rejected them as unsound.

Mr. OVERED considered Spavins most decidedly hereditary, and although many cases in harness-horses stood sound, he did not think we were justified in passing horses with them, or even recommending their acceptance by purchaser. Weaving and Fistulous parotid duct he also considered unsoundness.

The PRESIDENT, in concluding the discussion, said that although many of the abnormalities mentioned might not interfere for a very considerable time with the usefulness of the animal, still he thought that we could not be too strict in our examinations, or too careful in our advice to purchasers to

accept horses with unsoundness, be it ever so slight. The ordinary fee of 10s. 6d., he thought was far too small, considering the legal responsibility resting upon us.

Mr. WRAGG having responded to several questions, the meeting terminated with a cordial vote of thanks to the essayist and chairman.

R. S. BARCHAM, *Hon. Sec.*

THE SCOTTISH METROPOLITAN VETERINARY MEDICAL SOCIETY.

THE annual meeting of this society was held in the London Hotel on February 22nd, Mr. Burnet, Maybole, presiding. The attendance numbered less than twenty. Before proceeding with the business, the retiring President referred to the loss which the profession had sustained by the death of Principal Robertson, of the Royal Veterinary College, London.

Principal WILLIAMS also paid a tribute to the memory of the late Principal Robertson, and it was agreed to minute an expression of regret at his death, and to extend their condolence to his widow. It was also agreed to send a note of condolence to Mr. Aitken, Dalkeith, on the death of his son, Mr. George Aitken, of the Army Veterinary Department.

Professor LEWIS, the newly-elected president, having taken the chair, Mr. CUNNINGHAM, Slateford, brought forward the following motion—"That the Society be dissolved, a small committee being first appointed with powers to sell or dispose of the effects of the Society, uplift its funds, pay its debts, and hand over the surplus to the Veterinary Benevolent Fund, in the hope that soon after the dissolution of the Society two other fresh Scottish veterinary associations will be formed." He suggested that, owing to the small attendance, the meeting might be adjourned, as he thought there should be something like a unanimous vote before dissolving the Society.

Principal WILLIAMS thought it was quite competent for any motion to come before the meeting, seeing that all the members had received notice of it. He would like, however, that the motion should be withdrawn, and that they should try to go on some time longer as they were, by an amicable arrangement.

Mr. CUNNINGHAM said he would be glad if an amicable arrangement could be come to, but he had no hope that could be brought about. The Society was formed twenty years ago, and it had fulfilled its mission for eighteen and a half years, during which its meetings were a source of pleasure and benefit to them; but for the last year and a half a change had come o'er the spirit of the dream. They were a divided Society, and there were among them members who would not be reconciled to their neighbours. His object was to wind up the Society in a quiet and friendly way, if possible, in order that room and encouragement might be left for the establishment of other societies. The only point on which he had a difficulty was as to the legality of the step which he proposed, but if the opinion was entertained that the Society could only be dissolved by a unanimous vote, he advised that they should hand over £20 of the funds, which amounted to £23 odd, to the Benevolent Fund.

Mr. CONNOCHIE seconded the motion.

The PRESIDENT thought it would be a great pity if the Society were broken up. If they could come to an amicable arrangement, he was of opinion that it would be better to withdraw the motion.

Mr. STOREY, East Linton, moved as an amendment that the Society be not dissolved.

Replying to Mr. Cunningham, the PRESIDENT stated that two gentlemen, the "disturbers," had resigned—Mr. Rutherford having sent in a letter of

resignation, and he took Principal Walley's verbal statement at last meeting as amounting to a virtual resignation.

Principal WILLIAMS thought that, after what they had heard, the best plan was to dissolve the Society and distribute the funds; or, as a compromise, they might adjourn the meeting for a fortnight to consider that matter solely. After some further discussion as to whether there should be an adjournment or a decision, Mr. Storey withdrew his amendment, and Mr. Cunningham's motion was unanimously adopted, a committee being appointed to carry the resolution into effect. A vote of thanks was given to the office-bearers for their services during the past year, and the meeting terminated, the president's usual address not being delivered.

NEW VETERINARY SOCIETIES IN EDINBURGH.

THE unfortunate dissolution of the Scottish Metropolitan Veterinary Medical Society, due to disturbances, is to be followed, it would appear, by the institution of *two* societies on its ruins.

We are informed that on February 22nd, a meeting of gentlemen interested in the question of the formation of a new Veterinary Medical Association was held in the Royal Veterinary College, Clyde Street, Edinburgh, when it was determined that such a Society, under the title of the Royal Scottish Veterinary Medical Association, be formed, and that the object of the Association should be the discussion of purely scientific subjects. Professor Walley was elected President, and Mr. Archibald Baird, M.R.C.V.S., Secretary, *pro tem*. The necessary arrangements for the conduct of the Association were to be made at a general meeting to be convened on an early date.

On March 7th, in the London Hotel, a meeting was held for the purpose of forming a new Veterinary Medical Society. The following were present:—Messrs. Borthwick, Kirkliston; Connachie, Selkirk; Hutton, Kelso; Boyd, Kelso; Aitken, Jun., Edinburgh; Durkie, Dundee; Cunningham, Slateford; and Professors Williams, Williams, Jun., and Lewis, New Veterinary College, Edinburgh. The CHAIRMAN said that their old Society, after eighteen or twenty years' good work, and after one or two meetings which had not been very profitable, had been dissolved. He thought that this Society should be simply a practitioners' Society, unconnected with any college whatever.—Professor WILLIAMS said he thought that if the college element predominated it was very apt to lead to some dissension.—It was then agreed to form a Society to be called the Scottish Metropolitan Veterinary Medical Society, and the following gentlemen were elected as office-bearers:—President, Mr. Cornelius Cunningham; Vice-Presidents, Professor Williams, and Messrs John Borthwick and W. D. Connochie; and Secretary and Treasurer, Mr. Richard Rutherford.

ARMY VETERINARY ASSOCIATION.

THE Army Veterinary Association met on January 16th, when the subject of Soundness of Army Horses was discussed.

The question being such a large one, the Association propose discussing it at their subsequent meetings, and when completed the results will be published.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting of the above association was held at the First Avenue Hotel, Holborn, on Friday, September 30th, when the chair was taken by the President, Mr. J. D. Barford, of Southampton. The members present were Mr. E. A. Hollingham (Hon. Sec.); Messrs. Raymond, A.V.D.; C. Rutherford, A.V.D.; Rowe, London; J. F. Simpson, Maidenhead; F. W. Wragg, London; J. B. Martin, Rochester; H. C. Legge, Dorking; E. M. Rock, Chiselhurst; F.

Smith, A.V.D. ; H. King, Tunbridge Wells ; A. C. Piesse, Red Hill ; W. Hunting, London ; F. Warren, Hadlow.

Letters of apology for non-attendance were read from Messrs. L. Blake, C. Castle, T. Redford, H. J. Hogben, F. Knott, C. Hogben, and Sir H. L. Simpson.

The PRESIDENT having enquired whether any member had any morbid specimens to exhibit,

Mr. ROWE, the President of the Central Veterinary Medical Association, submitted a tumour which he had taken from a large collie bitch. He said that the animal had had no end of pups, and that the owner informed him that the tumour formed about three weeks since. From it he had removed two udders, and the chief feature was that it weighed three pounds and thirteen ounces, whilst the most extraordinary, perhaps, was that of all he had seen approaching an artificial heart, he never saw anything approaching it so near as this tumour. It was pendulous and had a very large base. The bitch was rather exhausted after the operation, but she was going on as well as could be expected. That was by no means the largest tumour he had removed from a bitch. The largest he removed was twice the size of the tumour before them, and the bitch recovered, but, lately, he heard that another was growing in another part of the body. The tumour before them was attached to one side more than another in consequence of the skin being puckered.

The PRESIDENT thanked Mr. Rowe for bringing such an interesting specimen, and observed that he had removed several tumours, one being some years ago whilst the animal—a large mastiff—was under the influence of chloroform, but it was not so large as that which Mr. Rowe had removed. He had not got the ecrasure then, and he removed the tumour with a knife in the ordinary way. A more satisfactory case under the influence of chloroform he never had, and the animal went on admirably well.

Mr. ROWE said that he did not use chloroform, and should never do so whilst he had the power of both hands and could use them with celerity.

The PRESIDENT said that in his case the animal came to in a quarter of an hour. He did not make it a regular practice to administer chloroform unless it was a very special case.

Mr. HOLLINGHAM said that he performed a great many operations on dogs in the course of a year, and he invariably used chloroform. If any of them had failed in using it, he would recommend them to try again. It was, in his opinion, most satisfactory ; at any rate, he had never had a death yet. He procured a tumbler and placed in the bottom some absorbing cotton. He put some chloroform on it, and then put the dog's nose into the tumbler, allowing sufficient air to penetrate so as to be able to move it. In that way he did not waste the chloroform, and got the dog under the influence of it in about three minutes. In cases where the eye was to be operated on, he failed to see how the operation was to be carried out without the animal being put under chloroform. As the question of operations had arisen, he might mention that he had a big case in hand, on which he should operate some time during the ensuing week. It was a case of Calculus in the urethra of a mare, and he proposed to get hold of with the spoonbill forceps and remove it in that way. It was firmly attached, and about the size of a duck's egg. It must be, of course, outside the bladder, in the urethra, and he should think it was about two inches from the neck of the bladder. Its presence was discerned in straining and the passing of bloody urine after exertion. He had known of injuries to the urethra in ponies being caused by boys or men forcibly pushing sticks in. He thought that was the case with the animal he had in hand, a splinter having been left in the urethra and become salted. The symptoms were very marked. The pony was a fast trotter and was driven by a lady, and when she pulled up, the animal stretched out and

passed a certain amount of bloody urine. It was evidently a source of irritation.

Mr. J. F. SIMPSON questioned the advisability of wasting time upon the subject of chloroform, which was a very wide one, and suggested that it should be adjourned, seeing that they had another very important matter to discuss. With regard to the removal of tumours, he should like to say for the information of those who had not had much dog practice, that the operation was not the formidable one it appeared to be. He had had several cases, and he agreed that it was not necessary to remove a large portion of the skin. After making the incision around the tumour and dissecting the skin backward, he found no necessity for the chain or anything of the kind. (Hear, hear.)

The PRESIDENT concurred with Mr. Simpson's views, and observed that in eight cases out of every ten the base was so small that the operation was far more simple than it appeared.

Mr. J. F. SIMPSON said he called to his mind a case he had two days previously. He was called to see a heifer which was roaming with others, and he came to the conclusion—probably a hasty one—that she had Laryngitis, for which he gave a blister to be applied to the throat. Some days afterwards it was reported that she was no better, and he made an examination, with the result that a tumour was found depending. It had a neck which could be taken hold of, but the tumour could not be torn off in consequence of the saliva making it slippery. It was a question to him how it was to be got off, because the ordinary chain and screw was not sufficiently long. He procured a piece of iron tube, through which he passed a piece of wire, and at the end he fixed his ecrasure, fastening the other end of the wire to the hook. His assistant put his hand to the heifer's throat, grasped the tumour, and, after passing the piece of wire to the other end of the tube, slipped it over the tumour, and he (Mr. Simpson) being at the other end, so to speak, got the tumour out. He mentioned the case because the chain had been called somewhat into question.

Mr. MARTIN said that his experience with regard to chloroform was quite opposite to that of Mr. Hollingham's, inasmuch as he generally found dogs very susceptible to the effects of it. In several cases it had proved fatal, facts which were calculated to disparage the profession. A little time ago he had a case of a dog swallowing a needle, which went through the back of the tongue. He prepared the owner for the worst, and gave the animal chloroform, but it killed it. He had such little confidence in it now, that he was half afraid of it.

The PRESIDENT said that very often it was a matter of quantity. He thought dogs required a very small quantity, and that sometimes they used a little too much.

Mr. HOLLINGHAM recommended the mixing of a little alcohol—spirits or wine—with the chloroform.

A Member confirmed Mr. Hollingham's views, and mentioned that on two occasions he tried to kill dogs with chloroform, and actually failed.

Mr. RAYMOND said that in many cases of operations on human beings, the patient died under chloroform when the tongue was allowed to drop into the larynx, and he thought that that was often the case with dogs. He would strongly recommend, therefore, that the animal should be taken by the hind legs, held down, and his tongue pulled out. Death from chloroform generally commenced at the brain, and if the dog was held as he had indicated, and the blood allowed to gravitate, it would tend to stimulate the brain and revive the animal. He had seen cases of people put under chloroform, where it had been necessary for the surgeon to catch the tongue with the forceps, draw it forward, and allow the breathing to go on.

Mr. Rock said he had occasion to attend a dog sometime ago which had had its eyeball dislocated three times in six weeks. He put him under chloroform, drew his tongue forward, and put an elastic band beneath it. Although he used a smaller quantity than on a previous occasion, and removed the chloroform immediately the animal was under its influence, to his surprise the breathing stopped, and he was unable to revive him by artificial means.

The discussion on the subject then dropped.

Mr. F. SMITH, of the Army Veterinary Department, Aldershot, then proceeded to deliver a lecture on

“THE RATIONAL TREATMENT OF SOME DISEASES OF THE LIMBS.”

Dealing first with *Sidebones*, he said he held that lameness in Sidebones was not produced by Inflammation, but by the sensitive laminæ which covered the cartilage becoming squeezed between the living cartilage on the one hand and the unyielding wall on the other. The cartilage enlarged considerably, and, as a result, there was a considerable squeezing of the sensitive laminæ, which produced pain. Hence it occurred to him some four or five years ago to adopt another mode of treatment to that which was generally pursued. He said that if he could remove the pressure from the sensitive laminæ, he ought to remove the lameness. He first took a saw and cut through the wall of the foot in two places over the cartilage, and, in order to complete the separation, he divided the wall from the sole with a fine searcher. The next part of the treatment was to take the bearing off, put a bar shoe on, and send the horse to work. He was surprised to find that in a few days the case improved considerably, and he had been enabled to send the horse back to work sound in about three weeks. In his first case he had to repeat the operation some months afterwards, and he did so with satisfactory results. He might note, as bearing on the theory of this operation, that where they had a divided wall, all pressure was removed, and room was made for the cartilage to enlarge, and, as a consequence, they found that the wall grew down in a regular bulge. It fortunately happened that the number of cases of Sidebone lameness was not very great. Quite lately, however, he had had one or two opportunities of trying his operation, and he had induced others to try it also. There was always great difficulty in inducing people to adopt new methods of treatment; but the veterinary surgeons to whom he referred willingly tried his operation, and he was more than gratified with the excellent results they obtained. In one case a horse had been going lame for two years, and had a most undoubted case of Sidebones in both fore feet. He was condemned to be cast and sold; but, being operated on in the manner he had described, he was now going better than he had done for the last two or three years. By the aid of a model foot, Mr. Smith described his *modus operandi*. He said he generally used an ordinary hand-saw. The horse need not be cast, for the whole thing could be done whilst he was standing, and was absolutely painless. He never, if he could help it, drew a drop of blood. When he found the horse commenced to flinch he knew he had gone far enough, and then went on to divide, with a fine searcher, the wall from the sole. After the incisions were made, and before the horse went to work, he filled in the cracks to keep out the dirt. Many people laughed at the idea of the foot expanding, but he held that it did expand, and he would advise any one who doubted it to try the operation he had referred to. After filling up the cracks with hard soap until it was level with the wall of the foot, they should let the horse trot twenty yards, and then they would find that the soap had become quite squeezed out, showing that the foot in expanding had brought the two edges of the division together, thus squeezing the material out of them. The after-treatment consisted, as he had said, in putting on a bar shoe and sending the horse to exercise. In draft horses

the probability was that they would be less fitted by sending them to their work almost immediately. Operations and new methods of treatment for certain diseases were abused because people had an idea that they should meet every case. Many appear to forget that every case is a problem in itself, and what is suited to one is unsuited to another. He was prepared to hear that his operation of sawing through the wall of the foot had failed in certain cases, because they knew that one system will not meet every case; but he was sure that everybody who gave the operation a fair trial in suitable cases would not regret it. In recent cases of lameness, he believed it to be of great value, and he should be glad if those present would take an early opportunity of trying it.

Now, with regard to LAMINITIS and its treatment. The treatment, as laid down by Mr. Broad, of exercise, was undoubtedly correct, the explanation being that the exercise assisted materially in facilitating the circulation; but this he held—that cases of dropping of the pedal bone should never occur, and that the specimens in our museums of the bone appearing through the sole of the foot would in time to come be looked upon as a relic of barbarism. He believed they could prevent it by performing on the front part of the wall such a simple operation as he had described. He thought there was a great future in store for mechanical treatment of the feet, not only with regard to foot contraction, but also acute Laminitis, terminating in dropping of the pedal bone. In an acute attack of Laminitis, when the symptoms did not yield to the treatment by the third or fourth day, he thought there was every reason to believe that the integrity of the foot inside was likely to suffer, and that the pedal bone would put in an appearance. He thought that was the time to operate, and, instead of allowing the toe of the pedal bone to come through the sole, to deal with the wall of the foot at once. They knew that the wall would not give way, and the consequence was that the toe of the pedal bone became pressed down through the effusion. They should saw the front of the wall in two places, and, instead of allowing the pedal bone to come through the sole, they should allow the wall to bulge. Once they had removed that pressure they need have no fear as to whether the sole would become affected, and in course of time the wall would undoubtedly grow down to its natural shape. Had it occurred to them what particular part of the foot was affected in Laminitis? If they examined the foot in an early stage of the disease, they would find it was not the whole of the laminae which became affected. The only part of the sensitive laminae affected was that portion which extended around the toe from quarter to quarter. He had never seen the laminae affected from the quarters to the heels.

The next point to which he would refer was the treatment of sprains. Of course in the army they saw a large number of cases, and they had opportunities of treating them which, perhaps, did not fall to the lot of the civil practitioner. Some years ago he had a case of severe sprain caused at tent-pegging. The horse was afterwards destroyed, and on examining the limb he found the whole of the fibres of the tendon dissected from each other by blood and serum, and he was much surprised at the amount of hæmorrhage which existed in the tendon. He thought that threw a certain amount of light on the treatment which should be pursued in such cases. The result of the hæmorrhage and serum was that the clots became organised and the fibres completely separated from each other, and thus placed in the most unfavourable position for union. As soon as he had a case of sprain he applied to the leg a bandage as tight as he could draw it, with plenty of tow underneath to prevent it cutting the leg. Next day he removed it and looked at the limb, and then applied the bandage again in exactly the same way, his object being to prevent further hæmorrhage into the structure of the tendon, dissection of the fibres one from another, and the thickening which generally remains. By

such bandaging they avoided to a considerable extent the great thickening which arose from the sprain of any tendon. He had adopted this treatment for some considerable time, and was satisfied that it was the best. When he heard practitioners say it was not a sprain of the tendon, but of the sheath of the tendon, he asked what part was affected. As far as his experience went, there was no synovial sheath at that particular part where horses became more often sprained than anywhere else; it was a misnomer, and moreover misleading, and he thought they should be more exact in their description of cases. He might appear to be finding fault, but he trusted they would not regard it in that light. As to dislocation of the patella, he was prepared to say that 80 per cent. of the cases were not dislocation at all. He did not believe there was the slightest displacement in the majority of cases. Let them take a horse which had been recently destroyed, turn him on his back, extend both hind legs, and press the muscles above the patella lightly, and they would find that the legs could not be bent. He regarded the majority of cases as spasm of the patella muscles. The rational treatment was to overcome this particular spasm. He certainly never blistered, but sent the horse to exercise as soon as he had reduced the phantom dislocation. There was nothing he regretted more than the many times he had applied a blister to the patella, and the loss of service which this occasioned. With regard to Lymphangitis, he was very dissatisfied as to the cause of it. He felt bound to accept the usual theory, but he could not see why the disease should settle in one hind leg and the fore-leg not suffer as well. He had only seen one case of Lymphangitis in the fore-leg. If they examined the leg of a horse suffering from the disease they would find an enormous amount of subcutaneous effusion, perhaps three or four inches in thickness, and also a considerable dilatation of the lymphatic vessels themselves. They had undoubted inflammation of the lymphatic vessels, with coagulation of their contents and consequent obstruction to the lymph stream. These clots are easily pulled out of the lymphatic vessels. They either got the lymphatic vessels permanently blocked as the result of this, or they had, which was perhaps the most common, an organisation of the fluid serum which is thrown out under the shin and between the muscles. Now he thought that hot fomentation was a little behind the times. If he had an ordinary case of slight Lymphingitis he applied a bandage to the leg as tightly as he could put it on, and then sent the horse to exercise. Although at first he might only walk on three legs, they would find after he had been out a short time he would get on much better. The explanation of this was that they facilitated circulation through the lymphatic vessels. He might add to his treatment a dose of physic, but he never used fomentation. If he had a very bad case, he should get away a fair quantity of blood by scarifying the limb. He was more anxious to get away the serum which was under the skin, as the longer it remained the worse were the chances of getting it away. If it was left it would become organised, and nothing they could apply would ever then reduce the leg to its normal size. After the incisions he applied an elastic bandage as he had described, and after the horse had stood for about twenty minutes the serum actually poured out through the bandage. By this operation he had had far more satisfactory results than by the other process. He had very few hind legs left enlarged; but if they were, they were not so large as usual, and he was perfectly convinced that by his mode of treatment his cases recovered much earlier than they would have otherwise done.

The PRESIDENT referred to the graphic nature of Mr. Smith's lecture, and observed that he opened up a new track, and gave them food for future trial.

Mr. HUNTING said that the difficulty which met him in making any remarks

on the lecture was that it was entirely original. Mr. Smith's treatment was so unexpected and new that one could only theorise upon it, and then they were met by the fact that Mr. Smith had already tried it; and found it successful. He told them that his treatments were rational; but if it could be shown that the treatment, or a part of it, which they already pursued, was not the cause of recovery, then it was for them to try the new experiment. He did not dispute that pain was greatly aggravated by pressure of the hoof in the case of Sidebones, but he should like to know how Mr. Smith accounted for variations in the lameness. As to treatment by means of rest, it was not uncommon to find three weeks' rest take away lameness in the case of Sidebones.

Mr. SMITH said that as a matter of fact he kept his horses at work the whole time.

Mr. HUNTING said that in some of the greatest cases of lameness, many of the oldest horses were absolutely free from pain. If it was pressure of the hoof which caused lameness, then Mr. Smith's treatment seemed to be rational; but he thought they might qualify themselves by asking whether the treatment itself might not be the cause of lameness. He was surprised to hear Mr. Smith say that the hoof expanded. If he meant in an outward direction, he (Mr. Hunting) stated exactly the opposite. There was no doubt that the back part of the foot did move downward, where they had the horn sufficiently elastic. He denied the expansion laterally, but acknowledged the downward movement of the hoof, which explained the pressure outward from the wall more logically than the expansion laterally. As to Laminitis and treatment by exercise, he did not accept Mr. Smith's treatment in acute cases. With regard to the dropping of the pedal bone, it was simply due to the exudation between the wall and the bone. He should not like to cut the wall with the idea of anticipating the protusion of the pedal bone through the hoof, but he would rather wait until he had a distinct reason to know that the pedal bone was coming through, and the symptoms by which he could expect it. In his opinion, by parting the wall they facilitated the descent of the pedal bone. With respect to sprains, he was utterly unable to follow Mr. Smith, because he had not made any *post mortem* examinations after recent sprains, and therefore he had not seen the effusion of blood. It was new to him to be told that the thickening of a broken-down tendon was due to the effusion of blood into it. If it was so, Mr. Smith's treatment might be good, but a difficulty existed in the time which might elapse before the case was seen. If the pressure was not applied during the first twenty-four hours, he failed to see how the pressure could act at all. By preventing the effusion it would cause much squeezing, and increase the pain. To be told that there was no sheath to the tendons seemed to be breaking down the anatomical faith of one altogether. With regard to Lymphangitis, they all used exercise in treatment, but he would ask how many of Mr. Smith's recoveries depended upon exercise, and how many upon pressure. The treatment by pressure seemed to him to be a little mechanical. The exudation in Lymphangitis was not merely fluid running into the limb, but fluid thrown out by vital process, and the exudation from vessels, he did not think, was checked by pressure. They had to find out the cause of the exudation. If it was in the lymphatic vessels, there was the cause at once. As to scarifying, it seemed to be purely illogical on Mr. Smith's part. He doubted whether the amount of fluid they could squeeze out of the superficial part of the leg through the opening made, and the awful pain caused to the horse by the elastic bandage, effected as much good as exercise and physic. He thought the pressure and scarifying were heroic kinds of treatment, founded on a too mechanical idea of the disease, and he was inclined, therefore, to stick to the treatment already adopted. He con-

tended that Mr. Smith's recoveries were due more to exercise than to scarification.

Mr. REDMOND said he knew to his cost that when cartilage became inflamed there was a good deal of pain. As to the treatment for Sidebones, he thought that cutting into the hoof in a recent case might have a good effect, and he should try it when he had an opportunity. Regarding Laminitis, he should like to know when they were to diagnose that the case would not require the treatment laid down by Mr. Smith, because it seemed an unnecessary operation if the animal was likely to get well without it. As to sprain of the tendon, he should imagine that a linen bandage would cause much pain; and as for the dislocation of the patella, he had noticed that when the leg went forward it went with a click. In some cases he had seen the horse put to exercise at once, and to his duty the next day. He thought there was something sound in Mr. Smith's treatment of Lymphangitis. If his theory of the lymphatic vessels becoming blocked prevented the lymph from passing upwards was true, it seemed feasible if they could get it to pass out in some other way. He never used pressure in commencing his treatment, but after the animal came back from exercise, and that, he found, prevented swelling recurring.

Mr. WRAGG did not agree with Mr. Smith's treatment for Sidebones, for, in his opinion, horses were seldom lame with them. As to Laminitis, he had treated in a similar way to Mr. Smith by sawing through the horn at the toe, and removing the horn all the way down until he reached the laminae. He had done that several times, and had been very pleased with the results, because his cases recovered before descent of the pedal bone. He was not a believer in the expansion of the foot, nor in the exercise treatment, for he could not help thinking that when a horse was suffering excruciating pain it was an act of cruelty to have him exercised. He had had very little experience of dislocation of the patella; and as regarded Lymphangitis, he did not remember having seen it more in the hind limb than in any other. In his experience, horses suffered more pain when it was in the fore limb.

Mr. MARTIN thought Mr. Hunting had met Mr. Smith's theory with regard to pressure in Sidebones very satisfactorily. They had many cases of enlargement, only one of which, perhaps, resulted in lameness. He did not believe much in firing for Sidebones; he had found unnerving to be the most useful. He did not think the theory of the pressure between the bone and the horn was really the cause of lameness, because if it caused it in one horse, it would cause it in all others. In acute cases of Laminitis, it was pressure of the horn on the deposit which pressed the bone down, the removal of the pressure did not remove the deposit. He did not think anything would stop the deposit in acute cases, but in chronic cases they would find that the broad shoe and exercise was the best treatment. He looked upon Lymphangitis as a constitutional disease, and he knew the case of a stallion, three out of four of whose colts had large legs. He agreed with Mr. Smith as to dislocation of the patella.

Sir HENRY SIMPSON said it was all very well to find fault with their treatment of Sidebones when they had tried it. No one, he understood, seemed to favour Mr. Smith's treatment. They might have lost sight of the fact that lameness before pressure was caused, in the process of transformation. However, he was disposed to give Mr. Smith's treatment a trial. With regard to Laminitis, he was bound to say that it was only in his own infirmary that he treated by exercising. Good might result from it; but in nine cases out of ten in private practice, they got the character of being inhuman. *Post-mortem* examinations of horses that had had Laminitis had not been performed by him, but he was bound to admit that where he had

made examinations, the laminae were not affected so much as he imagined they were. With regard to the effusion of blood on the fibres of the tendons, private practitioners did not get the cases in hand as soon as they occurred, whereas, in the service, a trooper or whoever had the charge of the horse was bound to report the case directly, and the veterinary surgeons in the army had better opportunities of observing the early changes which took place. He thought he had treated several cases of dislocation of the patella, which it was not uncommon to find in colts. It was evident they did not have a division of the ligaments, and he had seen colts and yearlings walk with little inconvenience. Altogether, he was inclined to think there were more cases of dislocation of the patella than they knew of, and he was surprised that London practitioners did not have more cases. Bandaging in Lymphangitis seemed to him to be a very rational mode of treatment.

Mr. HOLLINGHAM said he was inclined to favour Mr. Martin's view of the treatment of Sidebones. In Laminitis, the treatment by removal of the wall of the hoof seemed right theoretically, and in a suitable case he should not hesitate to try it. As regarded Lymphangitis, he had seen several cases in the country, and was of opinion that it occurred as frequently in the fore-leg as in the hind-leg.

The PRESIDENT said he should not like to let such a discussion close without making a few observations, and he thanked Mr. Smith heartily for taking the trouble to come among them. He had always been convinced of the immense advantages they received in inviting their friends from the army to come and relate their experiences and assist in their deliberations. (Hear, hear.) He wondered what their clients in the country would say if they were to cut away the wall of the foot as Mr. Smith had done. Whichever way the pain was caused, there was no doubt, if the Sidebone continued to grow and press the laminae, if that pressure was removed, they would to a certain extent benefit. It was a singular thing that they never met without hearing of new ideas, which they could work upon in the future. His experience of Laminitis was that if the disease had existed four or five days, it was difficult to obviate the separation of the hoof or descent of the sole. If they did not see the case for the first two or three days, their chance of success in saving the foot was doubtful indeed. As to sprain of the tendon, he thought Mr. Smith's treatment very rational indeed. Lymphangitis was a common disease in the country, and no doubt due to the disordered state of the blood. Dislocation of the patella was a vexed question, but he could quite understand that some of the cases which they called confirmed dislocation might be due to weakness of the joints in fast-growing colts, and they might be mistaken in having a partial instead of complete dislocation. In conclusion, the President again thanked Mr. Smith for coming to the meeting at his invitation. (Applause.)

Mr. SMITH briefly replied, and a vote of thanks having been passed to the President for his able conduct in the chair, the meetings of the Association were adjourned till March, 1888.

CENTRAL VETERINARY MEDICAL SOCIETY.

A MEETING of the Council of this Society was held at the First Avenue Hotel, Holborn, on March 1st, 1888.

Mr. WRAGG, Vice-president, occupied the chair, and the following gentlemen were present:—The President of the Society (Mr. Sheather), Professor Axe, Messrs. Mulvey, Oatway, Raymond, Roots, Samson, Woodger, and the Secretary.

The minutes of the last meeting were read and confirmed.

Communications were read from Messrs. Gray and T. S. Price, M.R.C.V.S.

Professor AXE proposed "That the Secretary be instructed to write to the past secretaries of the Society, asking for particulars as to the instruments and other properties handed over by them to their successors in office, and that he further inquire as to the loans of the instruments and properties made by each secretary."

Mr. WOODGER seconded the motion, and it was carried unanimously.

Professor AXE then proposed that the Society take steps to secure a room for the purpose of holding its meetings, and for storing its properties, and that a committee be formed to consider the ways and means of acquiring a suitable place.

Mr. RAYMOND seconded this motion, which was supported by the PRESIDENT of the Society and by Mr. SAMSON.

Mr. WOODGER (the Honorary Treasurer) was doubtful if the Society could afford the necessary funds, but proposed the following gentlemen as a committee to report on the matter: Professor Axe, Messrs. Raymond, Roots, Sheather, and Wragg.

Mr. SAMSON seconded this, and the Committee was appointed, Mr. Roots kindly undertaking to act as its secretary, and it was arranged that three members of the Committee should form a quorum.

The SECRETARY then read two letters received by him from Mr. George Thatcher, solicitor, of Doctors' Commons, with reference to the registration of the Society under the Friendly Societies Act.

Mr. SHEATHER proposed, and Mr. ROOTS seconded, that the further consideration of the matter of the registration of the Society be postponed until the next Council meeting. This motion was carried, and the meeting then adjourned.

SIDNEY VILLAR, *Hon. Sec.*

The following is Mr. Sheather's address on Splints, delivered 5th January, 1888.

GENTLEMEN,—In consequence of the unavoidable absence this evening of Professor Pritchard, I propose to introduce for the consideration of the Society the subject of "Splints." During the last three days I have mentally prepared some remarks on the subject, time not allowing of a written essay. The subject has come under my notice a great deal of late, and opportunities have occurred for making a great many *post-mortem* examinations in cases both of recent Splint and of old Splint. This subject is one which everybody knows a great deal about, and such subjects often yielded the best discussions. Splints, as they are commonly understood, are always deposits of bony material upon the surface of the cannon bone or the small splint bones, sometimes involving all, and sometimes only one. They have been classed according to their nature and position into Simple, Compound, "Pegged," and Carpal; this is of course more a clinical than a pathological classification, the pathological condition being the same in all or in most of the cases; that condition was inflammation of the bone or of the periosteum, which, from its close connection with the bone, led to the same results as inflammation of the bone itself. We have to deal with it mostly in young horses, and in such cases the disease frequently appears just at the time that the horses are first put to work. In my opinion these cases are, as a rule, cases more of Periostitis than of true Ostitis; they are usually of a benign character, and after the first deposit has occurred and the inflammation passed away they assume a passive state, and do not give rise to any lameness or trouble, unless the limbs become inflamed again from a similar cause to that which excited the disease at first. It is remarkable that horses often retain their soundness of action when they have extremely large deposits situated just below the knee and about the knee; such animals often worked for years;

while it is frequently the case that horses with very slight deposits are continually in pain in the region of the knee. Such instances have lately come under my attention in which horses have had to be destroyed because they did not get sound again. These animals belonged to people who put a very low value upon animal life compared with the pain which the animals had to undergo, and these cases had given him an opportunity of seeing the Splints *post-mortem*, when during life they were in an active state.

The Ostitis and Periostitis which gave rise to Splint might be divided into two stages—acute and chronic. The chronic was a very difficult one to deal with; the acute form ran through regular stages, of which veterinary surgeons were pretty well all cognizant.

One item of what he had to say that evening was to attempt to indicate a point in anatomy which would tend to show why the inner splint bone was generally more affected than the outer. It was generally said that the reason was because the inner splint bone was more under the centre of gravity than the outer; he had always thought that was rather a weak conclusion. If it should be stated that one part was weaker than the other part, they would be able to understand fully why the inner part should be affected more than the outer. If they took as an illustration a table with four legs, all of which were equally sound throughout, they would see there was no reason why the legs should split more upon the inner side than upon the outer. It was, however, found that upon the inner side of the cannon bone more Splints occurred than on the outer. It was very seldom that the inflammation of bone ran on to Necrosis; the inflammation generally caused a deposition of new bone, and there was enlargement. He once saw a case in which an animal had a great enlargement of the lower part of the outside of the cannon bone; in getting off a portion of this he discovered a piece of dead bone inside; this was removed, and after four months the callus again grew to a larger extent than before. That (Necrosis) was a danger which was not met with in Splint, but still there was such a degree of disease that the bone was totally altered in its natural circulation and never recovered its normal structure.

This was the cause to which he had alluded of those cases of continual lameness, in spite of treatment and rest; the result of the inflammation in one case of aggravated Splint caused a condensation of the cannon bone, and the closing up of the nutritive foramina, and hence the bone assumed an ivory-like appearance; the bone-cells were more or less encroached upon by the deposition of the hardened earthy material between them. When a Splint first appeared, a *post-mortem* examination would reveal a red gelatinous material beneath the periosteum; this became reddish-blue, and then swelled and became reddish-white, and finally white; and then it assumed the forms of soft cartilage, hardened cartilage, and afterwards soft bone; it then shrank somewhat, and the earthy materials were deposited, and the material assumed the character of real bone, with the difference that the blood-vessels and canals were very irregular.

The question of Splint was a very important one with reference to the soundness of horses, and it was a very difficult matter to determine what amount of Splint constituted unsoundness. It remained for the individual practitioner to give his own opinion upon each individual case; they would never get further than that. There was no doubt that large masses of bone might exist in the passive form without any effects whatever, while small masses might exist and produce much mischief—or rather, the mischief was produced by the inflammation, which kept recurring without much deposit, but which caused the horse to be useless.

It would be very interesting to put their finger upon the cause of the deposits about the limbs of horses; there was no doubt that hereditary

tendency played a very important part; perhaps from sixty to eighty per cent. of horses showed palpable disease of the limbs, and this fact almost proved that the disease was not caused by work alone; the enlargements grew symmetrically, and without pain, and almost as portions of the animal itself. They must conclude that there must be a tendency to disease in the system before the exciting cause was set to work. He held that the pace of the trot was a very important factor in the production of Splint. The trot was an almost artificial pace. The domesticated horse had been forced into a trotting pace to the exclusion of cantering and galloping. He believed that in a state of nature horses rarely trotted great distances. The observation of practitioners would tell them that the horses which were used for galloping paces did not suffer so much from Splint as trotting horses. The pace of the trot had this peculiarity in it, that alternately one fore-limb only took the force of the alighting body on the ground; when the right hind-limb, as they might say, propelled the body forward in the trot, the near fore-limb only took the weight, and the reverse took place on the other side; thus they had the weight of the body falling upon the ground wholly through one of the fore-limbs. In the gallop a leg might lead, but as soon as it reached the ground, the next so quickly succeeded it on the ground that the concussion was diminished, and there was not that excessive weight upon one fore-limb which there was in the trot. Another point to be noticed was the manner in which horses were shod. The farrier was a man who knew nothing about a horse's gait or action, or the way in which he put his foot down; the farrier treated the foot as level, and he put the shoe on level, and so the horse went to work again, only, perhaps, to wear his shoe away in some peculiar manner. The tread of the horse was ignored, and there was a strain thrown upon a part of the limb which the formation of the horse forbade to be exercised to that extent. The more horses were bred for fast purposes, the more frequent, as a rule, was the distortion of their limbs. Cart-horses were, perhaps, the most truly trotting animals we had, but the better the breeding the more distortion of the limb, and the twisting action came in, and with this came in an uneven action of the feet. This was ignored by those who shod horses. The animals were shod to make their feet look straight, and the fact was that a strain was unduly thrown upon some other part. Concussion was an exciting cause of the Ostitis and the Periostitis, which led to the growth of Splint. He believed that among other causes was external violence, such as brushing and bruising, although, as one might expect, this was not a very common cause; but the turning of a horse very suddenly at a trot might have the effect of producing the inflammation which led to Splint. He also believed that subsidiary to all these causes was the fact, that domestic animals were fed upon grain, the saline portion of which greatly consisted of phosphate of lime, and a great many drank hard water, which largely contained lime salts. These must supply their systems with the materials which were utilised in the growth of bony deposits, and they might account sometimes for the very large deposits which took place in such cases.

He would now pass to a point which he regarded as important in showing the reason why the inner splint bone should be more affected than the outer splint bone. He had brought with him an off fore-limb, and the lower row of bones of the knee. Of the three main transverse joints of the knee, two were ginglymoid—the carpal and radio-carpal; they were hinge joints, and there were no twisting or gliding movements; the lower articulation, the carpo-metacarpal, allowed a movement in a lateral direction, but only slightly. In analysing this movement, they would find that a rotatory movement of the os magnum upon the head of the cannon bone could only be effected in a direction towards the head of the inner splint bone, which has a

facet for articulation with the os magnum, and which resists the movement of the anterior and greater portion of the os magnum in the direction of the inner splint bone; the anterior portion of the articulation of os magnum with the large metacarpal is of a plane inclined downwards towards the inner side, facilitating a rotatory motion of the magnum, with its posterior process as a fulcrum or centre. To explain; if the horse wanted to turn to the near side and the off fore-limb was on the ground, the rotatory motion exerted upon that limb would be exercised upon the anthrodial rather than the ginglymoid, and the head of the inner splint bone would resist the impulse to twist by its articulation with os magnum. There was no resistance to its movement in the opposite direction, but the moment the slightest pressure, such as would occur at the sudden turning of the horse, was put upon it in the one direction, the tendency was to lift the small splint bone away from the cannon bone. He had no doubt that this was one of the causes why Splint was more common on the inner than the outer side. There was an inclined plane downward and inward on the head of the cannon bone, and, besides turning, any direct concussion would tend to drive the anterior of the os magnum towards the inner splint bone. The anterior part of the os magnum was kept in its place by the pressure upon the facet on the supero-internal part of the head of the inner splint bone, so that direct concussion alone, as well as suddenly turning, had a tendency to push the head of the inner splint bone away from the cannon bone, whereas no such pressure was exercised towards the outer side. He was not finding fault with nature in this respect; he was only in the same position as those who said that this part of the leg was more under the centre of gravity than the other, or that the inner splint bone received more individual and undivided pressure from above. He thought that when they come to consider that the horse was not intended to go upon the solid ground upon which we used him, or to wear an iron shoe, and that the adaptation allowed by soft ground was lost to him, and that he was not intended to trot, they would come to a rational explanation of the reasons for the existence of the disease, and also why the inner side was more affected with Ostitis and Periostitis than the outer one. He believed that this was, in a great measure, one of the causes of this peculiarity, and that although this theory may rather show a reason for strain of the inter-osseous ligament, yet that strain may be conveyed rather to the periosteum with which the inter-osseous fibrous tissue became continuous.

He need not keep them long with the diagnosis of Splint, because, as a rule, it was very simple. In young horses the peculiarity of gait, and the very great ease with which a tender point could be discovered with the fingers and thumb, were sufficiently well known. There was that difficult lameness which they sometimes got in older horses, and which passed under the name of Splint. Although the affection was more of a chronic and extensive nature, it was sometimes very difficult to deal with, because it was often complicated with similar disease in other portions of the bony structure of the limbs; this frequently occurred, especially in heavy barouche horses or carriage horses, and was attended with great pain. Also, disease elsewhere often caused an increased pressure upon the cannon bone, which gave rise to chronic inflammation, difficult to get rid of, and necessitating long periods of rest, and even then was not curable. He had not alluded to Rheumatism as a cause of Splint, for he did not recollect a case which he could fairly put down to Rheumatism. Rheumatism might have been a cause, but he failed to be able to give that diagnosis. He had some bones at home diseased in all portions of them, in which there was a rheumatismal diathesis, but he thought it was very difficult to assert that Rheumatism was the cause of the disease.

As to treatment, there was one point in which he differed from other

practitioners; in the case of young horses he was in favour of total rest where the splint was a first growth, or even a successive growth; but where horses were seven or eight years of age and there was found a little enlargement coming upon the site of an old splint, he believed that a total cessation of movement was not beneficial treatment. He had tried both plans, and had come to the conclusion that at least walking exercise should be continued in such cases; the main idea of the exercise was that the circulation would be maintained better than if the horses were allowed perfect rest. In the case of the horses which had worked hard from the fourth year to the seventh, and which had a pain in the region of the head of the cannon bone and the splint bone, and had grown little or no deposit, it would be found that if they rested entirely, they would never recover their soundness, and at last they would become useless. He had found that by treating them with walking exercise, and at the same time using other well-known remedies, he got greater success than when he allowed them perfect rest. In old-standing cases it was common to use blisters when the disease had not yielded to other treatment, and it was also customary to seton them. He found, in his own experience, setoning was the best treatment, but it was very difficult to give any regular rule as to what should be done. The larger the deposit and the greater indication the horse gave of bone disease, the less inclined he was to use the firing-iron. His own experience was that in such cases firing only increased the disease, without removing the inflammation which was the cause of the large deposit; in those cases he had found setons most beneficial. He always added another useful agent to those remedies which were used for the absorption of and for the treatment of Inflammation of Splint; that agent was oleic acid, which had great power of penetration. If an anodyne or mercurial compound was used with oleic acid, it would be found that there would be more effect than if those drugs were mixed with lard. He had found great relief from chloral and camphor with oleic acid. These made a very fine liniment, which penetrated to a great depth. Oleic acid was derived from palm oil by means of steam at a high pressure; the palm oil was resolved into oleic acid and glycerine. As an agent for adding to active drugs, it was one of the best to insure penetration. He had used it for eighteen months, and was fully satisfied as to its effect. In cases of acute pain it was a most excellent thing to use as an anodyne. There were other means of treating Splint which he had practised, but he could not say that they had been attended with any more success than the common treatment. Some time ago, at the instigation of a medical man, he operated upon a large Splint in a young horse; the animal was not lame. The medical man requested him to saw right through the Splint. He (Mr. Sheather) cast the horse and sawed down to the cannon-bone, and put a seton in and then left the horse. The result was a very large increase of the growth for the time being, and there was extreme density about the whole part, but, strange to say, the growth was absorbed gradually until the Splint became about half the size that it was when he put the saw into it. Whether this decrease arose from the sawing cutting off the greater portion of the nutritive supply he could not say. He had heard of another case in which a saw had been used, and the Splint had almost disappeared, but in this case the Splint was smaller and it occurred in an older horse. The readiness with which absorption took place in the case of older horses was remarkable. A frequent cause of the quack nostrums being successful, was that they were applied at a time when the system was ready to absorb bony deposits. The saw and chisel might be used beneficially in many cases, but they needed to be used with care. The owner ought to have notice that the use of these instruments might lead to a larger development than already existed. He should not hesitate to use the saw again in the case of an older horse with a

very prominent Splint, but he certainly should not use it with a more extended Splint.

Mr. VILLAR, in opening the discussion, said he felt sure that they would all be very grateful to their President for his kindness in coming forward at a short notice, and providing them with a very useful and very instructive subject for consideration. He thought that the theory which the President had brought forward as to the cause of the more frequent occurrence of Splints on the inner side of the leg was an entirely new one and a very clever one, and he had every reason to accept it. There was no doubt but that Splints were sometimes hereditary; he was sure that most of the gentlemen present had seen them in young, unbroken, and unshod horses, which was a very good proof that they were of an hereditary nature. He would like to ask Mr. Sheather whether when he used setons he also performed the operation known as subcutaneous periosteotomy. He (Mr. Villar) thought there was no remedy for old-standing Splint better than the budding-iron, but had found that in recent and acute cases linseed-meal poultices, medicated either with extract of belladonna or tincture of opium, were very beneficial.

Mr. SAMSON said that Mr. Sheather seemed to attribute the cause of Splint to trotting. He had no doubt that trotting had a great deal to do with it, but, in his opinion, it was the trotting upon hard macadamised roads. He believed that few horses showed Splint before they were taken upon such roads. As a proof of this Mr. Sheather had stated that horses which were kept for galloping purposes did not develop Splints. He agreed with that statement, and he did not think that half-bred horses would develop Splints if they were kept off the roads. He did not believe very much in the hereditary theory. He had found puncture firing the best remedy for Splint, and he used a much larger iron, and penetrated deeper than in other maladies. He had the iron as hot as he could have it, and pushed it through the periosteum down to the bone, and then applied a blister. In such a method of treatment there was not the fear of having an open joint, as there would be in a case of Spavin. They could go right through the small bone and into the cannon bone, and would not do wrong. After adopting this treatment for Splint the horse would require a long rest, and he felt this was the great secret, and was confident that in nine cases out of ten, in horses from three to five years of age, Splints would go away if the horses were merely turned out to grass and allowed a two months' run. When they were upon the cold wet ground the inflammatory action would abate, and all the bony enlargement would become absorbed. He once, at the urgent request of a client, a solicitor, performed the operation of sawing off a large Splint; as a result the horse threw out a bony growth four times as large as the former one, and he never became right afterwards. During his apprenticeship he knew two cases in which Splints had been sawn off, and he then determined never to remove a Splint with the saw without previously cautioning his client of the risks incurred by this operation. He found that the worst cases of Splint were usually incipient Splints—an incipient Splint could not be felt, but a little heat and tenderness could sometimes be detected; he thought that inter-osseous Splint would be a very much better name for this form of the disease; it is a bony enlargement which formed between the splint bone and the cannon bone, but there was not sufficient growth for it to be felt externally. He had found that in long and difficult cases of this form of the disease, the only plan was to put on a severe blister, and get the client to turn the horse away to rest. Time would do more than anything else.

Mr. MULVEY, after expressing the indebtedness of the Society to the President for bringing this subject forward, referred to the occurrence of Splint in thoroughbreds. He had had a great many of

such horses through his hands in the breeding studs, and his experience was diametrically opposed to that which the President had advanced. He had had Splints in foals from three or four months of age up to a year old; of course such animals had never been out of the paddock. As to older thoroughbreds, he knew two or three in particular, which had been on the turf, and had been brought back to the paddocks as brood mares with pretty considerable bony enlargements.

Mr. WRAGG said the subject was a very interesting one, but it did not appear to him to be one upon which there was much room for discussion. The President had raised the question whether horses having a Splint should be considered sound or not; in his opinion all Splints should be regarded as unsoundness, because horses of any age might go lame from Splint. The theory that trotting was the cause of Splint appearing on the inner side of the limb was new to him, and he would not then express any opinion about it; but they all knew the President would not bring forward a new theory without giving it a great deal of thought, and he had now backed up his theory with arguments which seemed to be unanswerable. He (Mr. Wragg) considered that setoning was the most efficacious mode of dealing with Splints, but he also liked to divide the periosteum covering the enlargement; he much preferred this method of treatment to the use of the firing irons.

The PRESIDENT, in reply, said that if no horse which was affected with Splint was to be considered sound, then there was perhaps only one sound horse in a hundred in existence. A young horse which had no Splint, and had been pronounced "sound," would very likely show Splint in the course of two or three weeks after going to work; there was no criterion that the horse would keep sound long. He had a perfect horror of a horse which had no Splint, because, sooner or later, he grew one; but he had not ventured to go into the question of soundness, because it was a very large one, and involved difficult points; what he had alluded to was practical soundness, and it was in reference to that, he said, that each case must be left to the judgment of the individual practitioner. The nature of the Splint with which a horse was affected would almost tell whether the growth was likely to increase; he thought that the shape of the animal's bones, and the existing irregularities afforded means of judging as to the probability of the disease becoming worse. Mr. Wragg had somewhat misunderstood him when he thought that he had said that trotting was the cause of Splint upon the inner side of the limb; this condition might be occasioned at any pace by any concussion or pressure being brought to bear upon the metacarpal bones. He had frequently performed periosteotomy and with success, but he was under the impression that there was a tendency to increased growth after it had taken place, and that if they cut the periosteum, the deposit would become larger, for the periosteum by means of pressure, restrained the amount of deposit, and it would even produce absorption. The operation relieved the strain upon the fibrous tissue, but at the same time it gave free license to the growth to increase to any extent. He did not want it to be thought that he regarded trotting as the only cause, but he believed that if a comparison was made between horses used in trotting and horses used in galloping, it would be found that the majority of the horses which were affected with Splint were the trotting horses. Those cases in which the disease appeared so early in thoroughbreds, as instanced by Mr. Mulvey, strongly supported the theory that the disease was of an hereditary nature; he fully believed in hereditary tendency, and he could not quite see how Mr. Mulvey's experience was diametrically opposed to his opinions. An exciting cause might bring on the disease, but in fact it was not always really required, for the affection seemed to come to horses while at rest and without pain. He remembered a horse growing a large Splint after two months'

rest in a loose box ; strange to say, it was not lame in the affected limb. Mr. Samson had very properly remarked that the hard roads had much to do with causing Splint, but he and Mr. Mulvey differed about the occurrence of Splints in young horses and in galloping horses. He (the President) doubted if Splints in the case of young horses would disappear by simply turning them out to grass, but they might diminish in size. Mr. Samson had remarked on the difficulty of diagnosis in cases of incipient or interosseous Splint ; this he (the President) considered was one of those lamenesses produced by the pushing away of the head of the inner splint bone by the os magnum ; the inflammation so produced caused an immense deal of pressure, and a long-continued pain, which would not be produced by other causes. He had used the firing irons to old Splints, but he considered the treatment very ineffectual, and he had ceased to use it in such cases ; in these cases he thought that the cannon bone was inflamed in its deeper layers, and that a seton kept in for some time had a much better effect than simply burning wounds, and allowing the dead tissue caused by the cautery to slough away. As to the application of anodynes, that was a point which he thought they greatly overlooked. It was very common to use a strong irritant immediately, but he thought that the use of an anodyne should precede it. It was surprising how quickly pain might be removed from Spavins and Splints by the use of anodynes in an oleic acid combination.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE annual meeting and dinner of the above Association was held at the Grand Hotel, Manchester, on February 10th.

Present : J. B. Wolstenholme (President), Professor Williams, J. B. Barford, Charles Sheather, F. W. Wragg, H. Olver, Peter Taylor, Thos. Greaves, Thos. Briggs, W. Woods, jun., John Lawson, Alex. Lawson, T. Hopkins, S. Locke, W. A. Taylor, Chas. Phillips, A.V.D. ; Phillip Deighton, H. Ferguson, A. M. Michaelis, J. Moore, H. C. Harrison, R. H. McKaith, C. Challinor, and the Secretary.

Of the sister profession were present : Professor Young (Owens College), Dr. Woodcock, Dr. Smith, Dr. Stocks, Dr. Harris, Dr. Redman, Dr. McLaren, Dr. Jones, Dr. Wolstenholme and Dr. Briggs ; also J. Barlow, W. J. Hopkinson, A. W. Briggs, and H. Hall.

Apologies, regretting their inability to attend, were received from upwards of sixty gentlemen, including the Mayor of Manchester, Dr. Fleming, C.B., Major-General Sir F. Fitzwygram, Sir H. Simpson, Professors McCall, Walley, Lewis, Axe and Brown, Colonel Halifax Wyatt, Mr. G. H. Hale, Dr. Dreschfeld, and Dr. Mann.

The SECRETARY read the circular convening the meeting.

The minutes of the preceding meeting were read and confirmed.

In connection with a circular issued by the National Association, and with reference to the election of members of Council, Professor WILLIAMS said that he had noticed with extreme regret that Mr. Banham, Secretary for the National Association, had associated his name with his own in canvassing for votes. Professor Williams wished the Association and the profession to understand that he knew nothing of the matter until he received Mr. Banham's circular, and also that he objected to the National Association being made use of for any purpose of the kind, or as a lever for a political purpose. (Applause.)

The PRESIDENT proposed, seconded by Mr. PETER TAYLOR, that Mr. Thos. Greaves be the nominee of this Association for election to Council. Carried unanimously.

After some complimentary remarks from Mr. BARFORD relative to the valu-

able services Mr. Greaves rendered in the Council and to the profession, it was proposed by Mr. PETER TAYLOR, seconded by Mr. S. LOCKE, that the usual Election Committee be appointed, such committee to consist of the office-bearers, in conjunction with Mr. E. Faulkner, with power to add to their number. Carried unanimously.

It was proposed by the PRESIDENT, seconded by Mr. P. TAYLOR, that Messrs. John and Alex. Lawson be appointed Auditors. Carried unanimously.

The PRESIDENT then delivered the following address :—

GENTLEMEN,—I thank you very much for the honour you have done me in calling me to occupy the presidential chair of this, one of the oldest veterinary medical societies in the kingdom. I regard it as an earnest of the desire of our profession to encourage and to stimulate its members to greater earnestness in the advancement of our art, when young men and general practitioners are thus elected. In remembering the number of able presidents this Society has had, of men ripe in years and experience, I must confess to a feeling which formulates itself in the hope that the Society may not suffer in any particular during my term of office.

I particularly desire that our younger members will take every opportunity of noting cases of interest, and that they will favour us with all the clinical reports and specimens they possibly can.

I desire to extend the warmest welcome to those members of the Liverpool Association who have joined with us, and hope that our title of "Lancashire" will be as much justified by the distribution of its numbers as by the amount and quality of the work done.

In connection with the Liverpool Association, I feel that I cannot proceed further without paying a tribute of respect to the late Professor Robertson, who represented it in Council, but who also represented all that is best in every veterinarian; for he was well-read, of untiring industry, earnest in purpose and in manner, at the same time eloquent in the forum, and courteous to all. He was a pillar in the profession, an acquisition to the College of which he was principal, and a man honoured and esteemed by all. We deeply deplore his loss, and trust that his example may ever be before us.

With your permission, gentlemen, I now pass on to review some of the topics which interest us as veterinarians. Science is advancing with gigantic strides and with amazing rapidity. Not long ago it took from three to four months for news to travel from the far west of North America; to-day we have the spectacle of the editor of a London paper having three hours conversation with his special correspondent in Vancouver Island, with an interval of two minutes only between their intercommunications. By means of the telephone we are able to distinguish the voice of one we know, though distant for miles.

In the study of Biology it seems to me that the advance made is no less striking. The old theory of separate creation for each species of plant and animal has been left far behind, and that of evolution substituted.

Science and observation have produced a complete revolution in medicine. It was a great advance when the zymotic theory was put forward and accepted; but a wonderful impetus was given when Pasteur first clearly demonstrated the true phenomena of fermentation; for from that time to the present the study of micro-organisms has been adding discovery on discovery, until now we are able to differentiate a great number, of which some are harmless, whilst others are capable of producing definite and specific disease.

Surgery also has many achievements to record. Look at the years of life and usefulness which have been added by the perfection of ovariotomy alone. Note also operations on the abdominal cavity in general, with gastrotomy in particular. There is also great advance made in the ability of the surgeon to

locate brain and spinal cord disease, which he can demonstrate, and prove the utility of his knowledge by operations when necessary.

Quite recently we read that, by means of a new instrument—the endoscope—it is possible to introduce an electric light into the bladder, and to bring the whole of its interior and contents under the examining eye of the surgeon.

In the special surgery of the eye, wonderful progress has also been made, but I know too little of the details to be able to give examples.

The advance made by our profession is substantial and satisfactory. I have not been referring to collateral progress in order to institute a comparison, but that we may be impressed with the velocity with which the world of thought and science is moving, that we may bring its teachings to bear fruit in our own individual spheres of usefulness.

One of the means at our disposal for this purpose is to be found in medical societies such as our own, and upon this subject Dr. Finlayson, of Glasgow, made a most thoughtful and instructive address a short time ago.

He considers that a clinical and pathological society can be made to the qualified practitioner very much what college and hospital instruction is to the student; the truth of this to me seems self-evident. A newly-qualified practitioner must take means to keep himself abreast of the flowing tide of progress, or he will quickly sink to what is known as “routine” and “practical” in the worst sense of these words.

In the ever-increasing field of medical literature certainly there is one means to this end; but I hold that, as you cannot teach anatomy by books alone, neither is it possible to advance in pathology in the same way. One glance at a preparation, or a single examination of a microscopic section, will often be more instructive and impressive than an hour’s dissertation by a master of language.

Not only should a veterinary surgeon strive to keep well up with science, but in his own department he should also endeavour to advance his profession, and in this direction a wide field of usefulness lies before him.

(To be continued.)

ROYAL AGRICULTURAL SOCIETY.

At the monthly Council meeting, held on March 7th, Sir JOHN THOROLD reported that letters had been received from the Royal Veterinary College, agreeing to the conditions laid down by the Council, on which the grant of £200 is made to the College for the further development of cattle pathology; from Mr. Walker, of Oxford, accepting the appointment of Provincial Veterinary Surgeon for South Oxfordshire; and from other persons.

A vacancy having occurred in the list of Provincial Veterinary Surgeons, through the death of Mr. Henry Peele, of West Hartlepool, the Committee recommended that Mr. John E. Peele, of Durham, be appointed as the Society’s Veterinary Surgeon for the county of Durham.

Professor BROWN had presented the following report:—

Pleuro-pneumonia.—During the first eight weeks of the present year there have been seventy-eight outbreaks of Pleuro-pneumonia reported in Great Britain, and 339 animals have been attacked. This is a satisfactory decrease as compared with the returns for the corresponding period of 1887, when there were ninety-one outbreaks and 465 cattle attacked. Of the outbreaks reported this year, 32 were in England and 46 in Scotland, and of the cattle attacked 151 were in England and 188 in Scotland. The counties in England in which most outbreaks have been reported are Kent (9) and Lancaster (8), or more than half the total number in England. In Scotland the disease has been most prevalent in Aberdeenshire and Lanarkshire; and in the former

there have been seventeen outbreaks reported, and in the latter thirteen, making about two-thirds of all the outbreaks in Scotland in those two counties.

Swine Fever.—There have been 649 outbreaks of this disease reported in Great Britain during the eight weeks ending February 25, and 3,604 swine attacked by it. Of the diseased swine, 1,958 have been killed, 1,315 died, and 356 recovered.

Anthrax.—There have been thirty-five outbreaks of this disease reported in Great Britain during the first eight weeks of the year. Thirty of these were in England and five in Scotland. The number of animals attacked by this disease has been 119, of which seventy-four were in England and forty-five in Scotland.

Professor BROWN stated that a letter from the Leicestershire Agricultural Society had been read at the meeting of the Veterinary Committee, calling attention to the necessity for uniform action in regard to the slaughter of animals suffering from Pleuro-pneumonia and Swine Fever. He thought he might venture to say that there had been a meeting of the Privy Council, at which it was resolved to issue an Order, but he was not in a position to say what this Order was.

Lord EGERTON OF TATTON said that he had to report that, as arranged at the last meeting, the President and himself had had a short interview with the Home Secretary. Mr. Matthews had requested him to state the case in writing, which he had accordingly done, and had also forwarded at the same time a published account of the experiments conducted at Hodnet. No answer had yet been received beyond a formal acknowledgment of the letter. There were three points which had arisen:—(1) Whether inoculation experiments which had been carried out by the aid of any virus whatsoever were experiments within the meaning of the Act? (2) Whether, if the experiments relating to Swine Fever which had been conducted by Professor Brown in the country had been carried out by ordinary practitioners, a breach of the law would have been committed? (3) Whether the placing of animals in contact with diseased animals for the purpose of testing the validity of the inoculation was an infringement of the Act? He (Lord Egerton) had also asked the question, "When would a veterinary operation cease to be an experiment, and if performed on a large scale in the field or on the farm, whether such an operation would come within the meaning of the Act? If such were the case, all improvement in veterinary science would be stopped, because his experiments were not experiments in the technical sense. They had been tested abroad, and he had sufficient faith in them to trust fifty animals to this system of inoculation, with a view of ensuring them from an attack of Quarter-ill. So far as he could gather from a discussion which had arisen on the subject in the House of Lords, his experiments did not come within the meaning of the Act, but if it should be found that they did, then it would be necessary to consider what steps should be taken to safeguard the interests of agriculturists in this matter.

THE MELBOURNE (AUSTRALIAN) VETERINARY COLLEGE.

ON January 17th a number of gentlemen met at the veterinary college of Mr. Kendall, M.R.C.V.S., in Brunswick Street, Fitzroy (not far from Victoria Street), to take part in the opening ceremony of that institution. A brief inspection of the premises before the opening ceremony was sufficient to make one aware of the completeness of the arrangements for the treatment of sick or hurt horses and dogs, etc. Nearly all the stalls were occupied by animals getting cured, and the dog-kennels were nearly all tenanted by "patients." The place is the only one of the kind in the colony, and now that its benefits are becoming widely known they are much sought after by

those who have sick or injured animals. The principal is Professor Kendall, M.R.C.V.S., and the lecturers are as follow:—Anatomy of the horse and other domesticated animals, Professor Rivett, M.R.C.V.S.; physiology, Dr. J. F. Joyce, M.D.; histology and the use of the microscope, Professor Kendall, M.R.C.V.S.; chemistry and botany, College of Pharmacy; pathology, Professor Kendall, M.R.C.V.S.; hospital practice and clinical instruction, Professor Rivett, M.R.C.V.S.; operative surgery and obstetrics, Professor Kendall, M.R.C.V.S.; materia medica and toxicology, College of Pharmacy; therapeutics and dispensing, Professor Rivett, M.R.C.V.S. The college has just been established, and already there are a fair number of students. At the opening ceremony of the college yesterday afternoon, Mr. Colville, secretary of the Central Board of Health, presided in the absence of the Hon. J. L. Dow, who was unable to be present. Apologies for non-attendance were received from His Excellency the Governor, Baron von Mueller, Mr. Blackett, Mr. Shillinglaw, and others. All of them expressed their warm admiration of the undertaking, and the benefits that would accrue from it.

The CHAIRMAN opened the proceedings, and called on Professor Kendall, who delivered the inaugural speech.

THE INAUGURAL ADDRESS.

Professor KENDALL said: The occasion which has brought us together to-day is one of more than ordinary interest, not only to stock-owners, but to the general community. Australia has already become one of the largest stock-raising countries of the world, and there remains ample scope for future developments and possibilities. It is therefore of the utmost importance to the future welfare of the country that we should endeavour to attain as high a degree of excellence as possible in all classes of live stock. But every one who has any practical knowledge of the matter is aware of the difficulties to be met with in attempting to improve the different breeds of stock, and also of maintaining any given standard of excellence. Not only have we variations of soil and climate to deal with, but a variety of conditions which constantly tend to a deterioration in size, form, and quality, and to an increased liability to hereditary and other forms of disease. As a field for the study of comparative pathology, few countries offer greater advantages than this. Prior to its being settled by Europeans it contained none of those animals that have been domesticated and have become the inseparable companions of civilised humanity; consequently, their comparatively recent introduction enables us to distinguish pathologically variations due to climatic or geographical causes. Many of the diseases from which our animals suffer differ in no material respect from those of the same character produced by similar causes in other countries, whilst others appear to be considerably modified in character and intensity from climatic or other reasons. Others, again, may be termed indigenous to the country, and are not met with elsewhere. Many of the latter are as yet but little understood, so that there is now an open field for a number of well-trained men, to say nothing of future requirements. As the country becomes more densely populated, and additional restrictions are placed upon animals by the further subdivision of pastoral lands, diseases are sure to increase in prevalence and variety, and the need for veterinary surgeons will become still more urgent. In the field of therapeutics there is much room for investigation. Already many valuable medicinal plants have been discovered, and I doubt not there are dozens of others amongst our native flora that only require a series of well-conducted experiments to test their effects upon animals in order to prove them to possess great therapeutic value. This is essentially the veterinarian's province, and it is to be hoped that some of you gentlemen who enter upon your course of study to-day will acquire an aptitude and liking for this kind

of work, and ultimately become specialists in it. The chief aim of veterinary science is, or should be, the prevention of animal diseases, and, I might also add, many of the diseases incidental to human beings which are due, either directly or indirectly, to the animal food we eat. The sooner this is generally recognised the sooner will the teaching of veterinary science receive the appreciation its importance deserves. The prevention of animal diseases is a matter which rests to a great extent with stock-owners themselves, and one of the main objects of this establishment is to give sons of stock-owners and others who intend following pastoral pursuits an opportunity of acquiring practical as well as theoretical knowledge regarding the causes and nature of animal diseases that will enable them to select sound, healthy animals to breed from, and to readily detect any deviation from health in the animals under their immediate care, and discover the causes which give rise to it. Animals, as well as human beings, have a language by which they can express their wants and desires, pains and pleasures – a language which is superior to our own, in that it contains no lie. It will be one of the most important parts of our duty to teach you how to interpret this language, so that you may be able to attach the correct meaning to the various expressions it contains. Those of you who intend following the calling of veterinary surgeons will find that your future will depend to a great extent on the facility and success with which you can diagnose the various diseases of animals. It has often been said that it is more difficult to determine the character of a disease affecting an animal than in the case in human beings. This I hold to be contrary to fact. Whatever information we are able to obtain from the symptoms expressed by a sick animal may be relied upon as being real and truthful. Animals, unlike human beings, seldom dissemble, and are not influenced to the same extent by imaginary complaints. Our difficulty does not rest with the animals themselves, but with the grooms, drivers, or others in attendance upon them, who, to cover some error or fault of their own, are prone to throw us off the right track as to the cause or character of a disease or injury, so that information obtained from this source has often to be taken with great reservation. I believe it is now the custom in several of the Continental schools to teach medical students how to diagnose animal diseases before allowing them to practice on human beings, and there has recently been some agitation in England in regard to adopting a similar method of teaching. To an unprejudiced mind there can be no doubt about the beneficial effect of such a training upon the students, as it must tend to a higher development of the perceptive faculties, and to less dependence being placed on what a patient has to say about the complaint from which he suffers. I heartily congratulate those of you who have joined these classes with a view of qualifying as veterinary surgeons. To those who have a love and regard for the lower animals there can be no more congenial occupation than to attend them in their sufferings, and being directed by their mute appeals to a correct understanding of their wants, and to be able to alleviate their pain and restore them to health and usefulness. It has often been said that animals are not worth doctoring in this colony, and that it is cheaper to destroy them and replace them by others. The records of the hospital in connection with this institution show, to the credit of owners, that it is not the money value of a horse or other animal alone that induces them to place it under professional treatment. A wealthy man may lose a horse and think little or nothing about his loss, but the man whose horse has been earning him his living, perhaps for years, does not allow it to suffer and die without making an effort to have it restored to health, and in the majority of cases he is rewarded for his trouble. While we are compelled to admit that up to the present veterinary science has made but little progress in Australia, there is every reason to believe that there is a much brighter prospect in the future.

We have to congratulate ourselves on the improved status given to the profession by the Veterinary Surgeons Act of 1887. The public will now be able to judge us on our merits as veterinary surgeons, and no longer have their opinions influenced by the conduct and abilities of a number of men practising under assumed titles. The four years study which the Act prescribes before you will be eligible for your final examination, which is a longer period than that enforced in the colleges of Great Britain, should be a sufficient guarantee that the status of the profession will not suffer at your hands if you only avail yourselves of the opportunities that will be given you of gaining both theoretical and practical knowledge. During the whole of the period you will have the benefit of seeing an extensive hospital practice, which in number and variety of cases is equal to that afforded by any of the British veterinary schools. In theory your attention will be first directed to what may be termed your preparatory studies. On three mornings in each week. Professor Rivett will lecture on anatomy, commencing with the skeleton, whilst it will be my duty to lecture on the soft structures of the body. For chemistry and botany you will be required to attend at the College of Pharmacy, where every facility is given for a thorough training in these important subjects. Dr. John F. Joyce, whose high scientific attainments are well known, will lecture on physiology and histology, both of which you will find of great value at a later period of your studies. Your more advanced studies at the College of Pharmacy will embrace materia medica, pharmacy, and toxicology, and at the institute you will be instructed in pathology and veterinary medicine and surgery, including the diseases of the horse and other domesticated animals. It is probable that at a later period of your course other teachers will be added to the staff, and the curriculum be made as complete as that of any similar institution in the world.

Professor RIVETT addressed a few remarks to the students, and moved a vote of thanks to the chairman, who, in responding, expatiated on the incalculable benefits of the college.

Notes and News.

TOORKMAN HORSES AND HORSE MANAGEMENT.—The Toorkmân of Oorganj (Khiva) are wanderers, living in felt tents. . . . A Khokandee who had travelled among them gave me a long account of the wonderful endurance of the Toorkmân horses, and of their power of flat-jumping, over water, etc. They fetch very high prices, and are so valued that a foal is often bargained for before it is born, if of a well-known strain. "Toorkee horses are taken immense care of and well groomed, but their treatment differs from ours in some particulars. The saddles are never taken off night or day, but covered over with the horse-clothing, which extends to the head and neck. They are walked about for a great part of the time that they are not on the road, sometimes for four or five hours after coming in. Even the commonest horses are tied up, and not allowed to feed indiscriminately. They get plenty of corn (barley or Indian corn), and but little grass. This makes them very fit for long journeys." "Yarkand, May 14th,—I do not think that I have yet described the Toorkee manner of treating horses, which differs in many respects from ours. As a rule, they are kept saddled and tight-girt both by day and night, and many Toorks will not allow their horses to lie down at all; saying, that if they do so, the corn settles in their legs and feet and makes them lame! So they tie them up short by the head. At the beginning of the day's march, before the sun is high, they are allowed a full drink of water at the first stream, but are given no more during the day, or until they have been in several hours. On coming in from a journey or ride the horses are first

walked up and down for two or three hours by small boys, after which, without unsaddling them, or even loosing their girths, they are covered up from head to tail with several thick horse-cloths, even in the hottest weather, and tied up as I have described, merely taking the bits out of their mouths, but leaving it hanging under their chins. After some hours they are taken to water, and a little hay is given them, and afterwards their corn; but unless it is still early, they are not cleaned till the next morning, as far as I have observed. At any rate, they are not touched till at least five or six hours after they have come in. In cleaning, a curry-comb is used, but afterwards, instead of a brush, they employ a small broom of twigs similar to the birchen switch, formerly so familiar to schoolboys. With this they switch the horse all over by quick motions of the wrist; first of all the reverse way of the hairs, and then the proper way. This little instrument is most effective, and leaves the horse with a beautifully clean and glossy coat. The Toorks are most particular about this, thrashing their grooms heartily if they detect the least neglect. The master will often test the cleanness of his horse with the cuff of his white under-robe or shirt. He wets this a little, and rubs the horse's coat; nothing will satisfy him but to be able to do this without leaving the least mark on the white sleeve. As a rule, horses here are not shod except for journeys in the mountains. But I need not say there are no macadamised roads to batter their feet, the whole country, roads included, being very soft earth, ready to fly into dust."—*Shaw's High Tartary, Yarkand, and Kashgar.*

PROTECTIVE INOCULATION FOR HYDROPHOBIA.—The Sanitary Council of the Department of the Seine received at its last sitting a very interesting report on the cases of Hydrophobia which had occurred in Paris during the year 1887. Nine deaths from the disease had taken place, which is more than the number of fatal cases which occurred in 1880, 1883, 1884, and 1886, and equal to those of 1882. Of the nine persons who died of Hydrophobia in 1887 five were children under fifteen years of age. It is important to note that of the nine people who succumbed in Paris last year to Hydrophobia, only two had been treated by M. Pasteur's methods, and even those two had not properly followed the treatment. One of them, a man, was a drunkard, who continued to drink and interrupted his treatment during five days. The other was a woman living at a long distance from the laboratory, who, owing to her occupations, could not come, as she ought to have done, twice a day to be inoculated. As for the Pasteur Institute, it treated 306 persons bitten in Paris by mad dogs or animals supposed to have been mad. On the other hand, forty-four persons are known to have been bitten by dogs supposed to be mad, and not to have been treated at the Pasteur Institute. Of these, the seven people mentioned above as among the nine who succumbed to Hydrophobia in Paris died. Thus, of forty-four persons not treated by M. Pasteur's methods seven died, which is a mortality of close on 16 per cent.; whereas among the 263 persons bitten by animals proved to be mad and treated at the Pasteur Institute, the mortality was not more than 0·67 per cent. M. Dujardin Beaumetz, the vice-president of the Sanitary Council, said that, in presence of this result, it was the duty of the council to use every means at its disposal to favour the practice of inoculation against Hydrophobia.

STRAY DOGS IN LONDON.—During the month of February, 1,173 stray dogs were taken by the Metropolitan Police to the Dogs' Home at Battersea. Four dogs were killed, three by the police and one by a private individual; but only one of these was certified by a veterinary surgeon as suffering from Rabies. Thirty-nine persons are reported to have been bitten by dogs during the month.

EXTRAORDINARY HYDROPHOBIA.—Hydrophobia is reported to have attacked a number of people who had eaten the flesh of a pig that was supposed to have died of Rabies, in county Leitrim, Ireland. A farmer treated them and they all recovered. The absurd story would not deserve narrating, had it not caused much excitement, and been believed in by persons who ought to have known better, and who made public their ignorance and credulity.

VETERINARY HONOURS.—At the meeting of the Société Centrale de Médecine Vétérinaire, on January 26th, Mr. Robinson, F.R.C.V.S., Greenock, was elected a Foreign Correspondent.

STATE SUPPORT OF VETERINARY EDUCATION IN FRANCE.—Nearly the whole of three sittings of the French Chamber were recently devoted to the discussion of the Budget of the Minister of Agriculture. The sums for the various services composing what is termed the "direction of agriculture," have been voted, and we learn the sums which Veterinary education costs France. For the Staff of the Veterinary Schools, 432,800 francs (£17,312); material for these schools, 566,000 francs (£22,640); making a total for the year of £39,952. For services in connection with the suppression of cattle diseases, 157,800 francs (£6,312); indemnities for slaughter of animals, 460,000 francs (£18,400).

Correspondence.

ELECTION OF MEMBERS OF COUNCIL.

SIR,—The time is fast approaching when members of the Royal College of Veterinary Surgeons will be called upon to elect seven members to serve on the Council Board, one to fill the vacancy caused by the lamented death of Professor Robertson, and the other six which occur in the regular course. I desire to draw the attention of my professional brethren to the desirability of making a change in the constitution of the Council Board. At present there are no fewer than nine Examiners who are also Councilmen, and there are several other Examiners who are candidates at the ensuing election for seats at that Board. Events have occurred within the past eighteen months which, in my humble opinion, render it imperative that no Examiner should have a seat at the Council Board. I believe, and I have on several occasions given expression to that belief, that it is impossible for a man to act impartially in the double capacity of Examiner and Councilman. The Examiners owe their *lucrative* appointment to the Council, and they ought to be the best men *in the profession*. Their duty is to admit men into its ranks, after satisfying themselves that the candidates possess the necessary qualifications, and present their report of the result of the examinations to the Council.

The Council being the governing body of the profession, should, in my opinion, be composed of men who have the best interests of it at heart, men who have an intimate knowledge of, and aptness for conducting its business, and men who will, without fear on the one hand or favour on the other, consider and manfully decide and act to the best of their judgment on every subject affecting the profession.

I heard an Examiner say at a public meeting that the Council was bound to listen to the Examiners, that they should be compelled to uphold them, etc. Bearing in mind what has taken place within the period already mentioned, it is clearly demonstrated to my mind that this dictatorial spirit has had the effect of preventing freedom of action on the part of the Council.

It has been frequently argued that when once a man gets a seat on the Council he ought to be re-elected on the ground of him being a tried man. Well, I do not see any objection to this, provided he has consulted the best interests of the profession, and provided he is not an Examiner.

So far as I am aware, there are only three "plums" in the profession, and I do not think any man should have the lot. The Examiners have the best plum in being well paid for their work, and thus they ought to be content. The Council have the next plum, in having the honour of legislating for their brethren; and the profession has the smallest but most important plum in having the privilege of electing those to the Council Board who will best study their interests. I have heard it said that the Examiners cannot be turned out. I do not suggest that they should be turned out *in a body*; they ought to have the privilege of deciding whether they can best serve the profession as Examiners or Councilmen. If they decide to remain the former, then I suggest that we fill their places by electing men who are not Examiners as their respective term on the Council expires, and in this way there would be no need for the board of appeal which Mr. Greaves thinks is necessary. I disclaim any hostile feeling to the Examiners or any one of them, but I am convinced that it would be to the best interest of the profession if the Council and Examining Boards were separate and distinct. I have been told that I am inconsistent in my appeals to the profession because I took up "Clause ix." and nothing came out of it. I do not see where my inconsistency is, because I am of the same opinion *re* that clause, and I am not without hope that the day will yet come when it will be rescinded, as it retards the advancement of the profession. I intend taking the same course with the question I have raised, viz., leave it with the members, for it is with them that the successful issue rests, and it is with them I leave it, for I am sure no good end would be attained by an individual member constantly harping on one string.

H. KIDD, F.R.C.V.S.

Hungerford, 9th March, 1888.

ABNORMAL POSITION OF THE ŒSOPHAGUS.

SIR,—I notice in the January number of the Journal some remarks on the "Abnormal Position of the Œsophagus." I recently noticed a case in one of our hospitals, in which the balls that were administered passed down the right side of the neck, much to the amusement of our head groom. We rarely give drenches, and this is the first instance I ever saw, and we use about 2,000 balls per annum.—I am, sir, very truly yours,

Albany, New York.

EDWARD MOORE, M.R.C.V.S.

CHOREA AND SHIVERING.

DEAR MR. EDITOR,—May I be permitted to ask your advice on the following:—

I last week examined a mare as to soundness, and found her to be what is commonly known by horse-dealers, etc., as a "Shiverer." On my certificate I certified that the mare had "Chorea," and consequently was unsound. A neighbouring veterinary surgeon, on seeing my certificate, said that it was wrong, that "Chorea" was not a disease of horses, but was seen only in dogs.

Would you oblige me by saying in your valuable Journal whether or not I was wrong in using the term "Chorea," instead of the copier's term "Shiverer"? Joco.

[Chorea may affect all animals, but is most frequently observed in mankind

and dogs. The morbid condition to which the unscientific name of "Shivering" has been given is not Chorea, though that disease is sometimes observed in horses.—ED. V. J.]

THE LATE PROFESSOR ROBERTSON.

A meeting of the students of the Royal Veterinary College was held in the theatre of the college on January 18th, for the purpose of taking steps to raise a memorial to the late Professor Robertson. Professor Axe presided, and after referring to the many excellent qualities of the late Principal, and his untiring devotion to the interests of the students, called upon those present to suggest the form they were desirous the memorial should take.

After some discussion it was resolved to place a marble bust of their late lamented teacher in the museum of the College. A committee was then formed, comprising students from the several classes to consider and report upon the best means of effecting the object in view.

A subscription list was then opened amongst present and past pupils of the late Principal, and the members of the profession.

The donations are not to exceed half a guinea. W. J. Moran, M.R.C.V.S., is hon. sec.

THE DISCUSSION ON THE PATHOLOGY OF "SURRA."

SIR,—Mr. Steel has, for the third time, attacked me in the *Quarterly Journal of Veterinary Science in India*, January, 1888, for writing on the subject of Surra, and has raised many personal issues against myself, which I beg to consider, by your kind permission, through the medium of your journal.

Figuratively or literally, personal grievance and personal attacks cannot constitute a symbol of science, although Mr. Steel thinks differently. Discussions regarding the science of disease are no more a personal question than discussions regarding any other science. I would much rather that we avoided personalities in our consideration of this disease. Upon certain personal issues, therefore, that have been raised in Mr. Steel's paper we do not intend to enter. I have endeavoured elsewhere to correct one or two of the errors which have naturally grown out of this habit of abuse introduced into our discussions on scientific questions, which generally owe their origin to an incomplete acquaintance with the facts as actually stated by the writer, or to prejudice.

But we ought to refer to one view in which this matter has been presented, for the sake of protesting against it. An attempt has been made to introduce Professor Zschokke's name into the discussion (*The Quarterly*, October, 1887), and to make his views on the subject of Pernicious Anæmia in animals into a national question. It has been further stated that my views are simply those of Professor Zschokke, with an unavoidable addition; and my paper on "Surra" has been made the occasion of taunting me with our non-recognition of that author's writings on Pernicious Anæmia. There is a grave misunderstanding here. As far as I am aware Professor Zschokke never wrote on *Surra* being the same disease as Pernicious Anæmia; but what he wrote was this, that Pernicious Anæmia was a very common affection in the horse in Europe; and I have simply endeavoured to show that "Surra" is the same disease seen in India, although it was not recognised as such before my articles appeared on the subject.

It has been suggested by Mr. Steel that we have borrowed our views from Professor Zschokke's article on Pernicious Anæmia. We may refer our readers to the literature of the subject, given as a frontispiece in our

"Monograph on Surra, or Pernicious Anæmia in the Lower Animals," lately published. It will be seen that Professor Zschokke was *one* of the first veterinary authors, though not *the* first, who described this disease in Europe. We have therefore freely quoted from his work whenever we found this author's views in agreement with our own.

In reference to dates, while we realise that in our first article on Surra we appeared to give the date as 1885, through a printer's error, it is clear that Mr. Steel could not have even read Professor Zschokke's article in question, or else he would not give *dates* in favour of his argument (*The Quarterly*, October, 1887). The date of Professor Zschokke's first publication is 1883, and not 1885, as stated by Mr. Steel; yet Mr. Steel insists on dates being given in favour of his argument. He says (*The Quarterly*, January, 1888): "Our author has failed entirely to inform us that Evans has two years priority to Zschokke in the records of *this disease* (?), both as regards description of the *disorder* (?) and of the parasite found in the blood." But is there not some error of statement here? Dr. Evans described a disease called "Surra" in India, and found a parasite which now goes by his name, date 1880. He suggested no new name for this disease, save "Surra."

2. Mr. Steel next wrote on the disease, and called it Relapsing Fever, dated 1884.

3. I described the disease known as "Surra" last year (1887), and named it Pernicious Anæmia.

4. Megnin, Zschokke, Johnne, Imminger, then Fröhner, and many others had described a disease of the horse in Europe which they called Pernicious Anæmia. Who called *Surra* Pernicious Anæmia does not appear clear in Mr. Steel's attacks against myself.

Mr. Steel goes on to say that "Veterinary Surgeon Steel's report on Surra has failed to obtain a proper hearing"! Why does Mr. Steel ignore the fact of Pernicious Anæmia having been suggested for "Surra" by the writer?

Mr. Steel says he is "willing enough to admit that progressive Pernicious Anæmia is a symptom of Relapsing Fever (Surra) of the horse"; but we must add that it is not only a symptom of Surra, but that *Surra is actually Pernicious Anæmia*. We should refer Mr. Steel for our reasons for considering it so to my "Monograph on Surra, or Pernicious Anæmia" above alluded to, and to my article on that disease lately published in the VETERINARY JOURNAL.

Not content with his criticisms of my paper on Surra, Mr. Steel next directs his attacks towards my report on an outbreak of Anthrax I was deputed to investigate in Meerut during 1886-7. He concludes that the "evidence tends to support the view that Surra *was* present, and Anthrax also may have been." My investigations above-mentioned led me to report that the evidence supported the view that Anthrax *was* present, and Surra may have been before I arrived there, as I only reported on the cases actually seen by me, and not on what Mr. Steel might have seen. We are told that we have "no clear ideas on the differences between remissions and relapses." We protest against such arguments being presented as *reasons* in favour of any opinions.

I daresay the somewhat oddly-worded scoldings in which Mr. Steel indulges are well deserved, and I have no doubt I shall duly profit by them. But they are none the less to be regretted, because they leave practically no room for rational discussion of the material parts of my subject. It may be hoped, however, that the petty jealousies which have been aroused will not be gratified, and that the ungenerous attacks by Mr. Steel may not find many imitators.

There is no doubt that inquiry will most wonderfully modify prevalent views regarding the subject of Surra. In the future, when the best minds

of the profession turn to the subject, many points dim through non-representation or wrong representation will appear in their full light. Every veterinary surgeon interested in the subject of Surra and its pathology will rejoice to see an unsparing examination of the question, What *is* Surra, and what remedies are most likely to cure it? Mr. Steel would answer me by introducing personalities into the question. We may only refer to Mr. Steel's attempt to mix up my papers on Anthrax with those on Surra, and the latter with a paper I some time ago forwarded to the *Veterinarian* on "The Veterinary Profession," to show the relevancy of Mr. Steel's arguments. We have, however, got one definite reply from Mr. Steel, notwithstanding our differences of opinion, which I will give here. He says: "Mr. Burke *thinks* that Surra is Pernicious Anæmia, but has nowhere established this view, which is open to very serious objections." It is for the profession to judge now, on the evidences brought forward by Mr. Steel and myself severally, whether the disease known as "Surra" in India is Relapsing Fever or Pernicious Anæmia of the horse. It is clear Mr. Steel does not consider this disease (Surra) to be Pernicious Anæmia of the horse, and I do; and my reasons for considering it this disease I have already described at length in a recent number of the *VETERINARY JOURNAL*, to which I may refer my readers.

We may point out the main differences that exist between Mr. Steel and myself on the subject of Surra. Mr. Steel suggests Relapsing Fever, and we have suggested Pernicious Anæmia. The only argument Mr. Steel brings forward for saying the disease is *not* Pernicious Anæmia, is that female animals are not more subject to it than males. While among the foremost reasons we have suggested against this disease being Relapsing Fever are these:—

1. That in Relapsing Fever there is seldom more than two or more relapses, usually only one; whereas in Surra there are usually an unlimited number of relapses noted.

2. The fatality in Relapsing Fever is very slight; whereas Surra is a disease which is "invariably fatal" in its results.

3. Considering the relative difference in the number of male and female animals in the service to be in a very marked degree in favour of the males, and that Mr. Steel's chief experience was with transport mules in Burmah, we cannot place much reliance on statistical evidence such as Mr. Steel has brought forward in favour of his suggestion.

4. The clinical history of Surra in general is that of Pernicious Anæmia. Mr. Steel may say there are differences; but, to use a favourite expression of his, and with which we concur, "What appears in man may not in the lower animals, and *vice-versâ*" (*The Quarterly*, January, 1888). And if there be any differences, what they are we have yet to be informed; and whether these differences are greater than those we have seen in the case of the Relapsing Fever hypothesis. What we should like to know, is whether "Surra" can be identified with any other disease with as few differences, if any, as it can with Pernicious Anæmia suggested by ourselves.

Jubbulpore, *February 8th*, 1888.

R. W. BURKE, A.V.D.

THE PREVENTION OF ACCIDENTS BY CARRIAGES.

We are requested to publish the following:—Having noticed how frequently fatal and severe accidents occur through persons being run over in the streets, and noticing also that on the ordinary tramwar car, each wheel is fitted with a guard, it strikes one's attention as being very sensible, and likely to prevent fatal damage to any person falling before the wheels of the car, as it would

keep him from under them until the car was stopped, or else throw him out of the way.

Now could not some simple wheelguard be adopted on all vehicles? Say an iron bar similar to that which holds the step, projecting downward in front of each wheel, so that any person falling before it would be caught and kept from under them; the ordinary step might be affixed to it. The wheelguards on the tramcars seem to answer excellently, and effectually protect any horse which happens to fall down from being hurt by the wheels, and they would no doubt do the same to human beings.

NOTICE.

IN order to ensure early insertion in the JOURNAL, it is requested that Secretaries of Veterinary Societies will condense their reports as much as possible, omitting all superfluous matter and minor details, so that space may be economised advantageously.

A CORRECTION.

IN the obituary list for February, the name of "P. E. Carter" was given instead of "Richard Carter."

TO ENQUIRERS.

MANCHESTER.—Your first question we cannot answer, but the result must depend upon circumstances. 2. Sir Henry Simpson was knighted because he was Mayor of Windsor during Her Majesty's jubilee year, and not because he was in any way connected with the veterinary profession. The distinction conferred upon him is an evidence that being a member of our profession is no bar to civic honours, or even to royal recognition of civic duties well carried out.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from W. T. Moran, London; J. A. Nunn, A.V.D., Basutoland, South Africa; "Joco"; F. W. Somers, Leeds; J. Matthews, Edinburgh; J. Moran, London; Messrs. Arnold and Sons, London; E. Moore, Albany, New York; A. Hollingham, Tunbridge Wells; R. W. Burke, A.V.D., Jubbulpore; C. Gresswell, Nottingham; G. R. Dudgeon, Sunderland; A. W. Hill, London; A. Peele, Durham; A. C. Cope, London; J. Ambler, Halifax; H. Kidd, Hungerford; A. Leather, Liverpool; Professor J. Smith, Toronto; F. Raymond, A.V.D., Woolwich; F. Smith and C. Rutherford, A.V.D., Aldershot; J. Armstrong, Penrith; H. Tweedley, Glasgow; R. S. Barcham, Paston; C. Cunningham, Slateford; S. Villar, Harrow.

BOOKS AND PAMPHLETS: *R. Bartholow*, A Practical Treatise on Materia Medica and Therapeutics; *T. S. Dowse, M.D.*, Massage; *S. B. G. McKinney*, The Science and Art of Religion; *Annuaire de la Société Nationale d'Agriculture de France*; *J. F. Churchill, M.D.*, The Increase of Cancer in England.

JOURNALS, ETC.: *Journal of the National Agricultural Society of Victoria*; *Recueil de Méd. Vétérinaire*; *Deutsche Zeitschrift für Thiermedizin und Vergleichende Pathologie*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Echo Vétérinaire*; *Revue Vétérinaire*; *American Veterinary Review*; *Lancet*; *Mark Lane Express*; *Live Stock Journal*; *Edinburgh Medical Journal*; *Journal de Méd. Vétérinaire*; *Hufschmied*; *Der Thierarzt*; *London Medical Record*; *American Live Stock Journal*; *Quarterly Journal of Veterinary Science in India*.

NEWSPAPERS: *Melbourne Daily Telegraph*; *Scotsman*; *Edinburgh Evening News*; *Morning Post*; *Lahore Civil and Military Gazette*; *Irish Times*; *Dublin Evening Telegraph*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

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“ROARING.” *

BY T. HOPKIN, F.R.C.V.S., MANCHESTER.

THE term “Roaring” comes down to us from the past, when a concise, graphic, and forcible style of nomenclature was in vogue; it covers a number of ailments—all, I might say, in which a roaring noise is made in respiration.

It may be due to acute inflammatory action, as in Laryngitis; tumefaction, as in Strangles and sub-maxillary abscess; nervous, as in “Laryngismus stridulus” or spasm of the glottis, and “Laryngismus paralyticus” of Fleming—atrophy of laryngeal muscles. This latter is the general form, and the one we purpose considering most fully.

In excessive “roarers,” or, as the horse-dealers call them, “belloned bulls,” the noise is not due to paralysis of the laryngeal muscles, although this may be associated with the other causes. Tumours falling into the glottidean opening: the roaring in these cases will be either constant, or, if intermittent, liable to recur with change of position of the head. Disease of the heart and lungs: Percivall refers to a case of the latter. I have also seen several in which the animal, when quiet, appeared perfectly normal, but on slight exercise, dyspnœa and loud roaring occurred. Such cases are not common, and a mistake in diagnosis may easily be made, the breathing simulating that produced by obstruction in the larynx or trachea, far more so than the dyspnœa due to destruction of lung tissue.

Fracture of the rings of the trachea is, in my opinion, the most general cause; two cases of recent occurrence are instructive. No. 1. The driver of a dapple-grey cart-horse belonging to a firm in this city, complained of his horse refusing to work, and if excited or urged at once commenced to roar. Up to this period he

* Read before the Lancashire Veterinary Association.

had been a good worker and sound in his wind; there had been no sickness. The suddenness of the attack led me to doubt its being a true case of Laryngismus paralyticus. No improvement following the operation of tracheotomy clearly demonstrated the fact that the obstruction must be below the seat of operation. Careful examination revealed longitudinal fracture and lateral collapse of two rings of the trachea as it entered the chest, below where the collar comes. Not being able to devise any means whereby the animal could be rendered useful, we obtained the owner's permission to verify the diagnosis by a *post-mortem* examination. I had the specimen, but am sorry to say it has been borrowed, I fear without my permission, and its return is problematical, so I have manufactured an artificial one. No. 2. Also a grey horse bought by a small farmer from a well-known low-class horse-dealer; he afterwards ascertained that this horse had travelled from fair to fair. In hand the animal ran fairly well, but was utterly useless for harness, as directly the collar pressed it began to roar, and exhibited extreme dyspnœa. This was due to the same abnormal state of the trachea as the other. The owner being poor, he would not consent to have it destroyed, and the animal resumed its peregrinations. In neither case were any marks of external injury visible, but I am inclined to think the collar may possibly cause these injuries.

CAUSE OF LARYNGISMUS PARALYTICUS FIRST DISCOVERED.—Roaring due to atrophy of certain muscles or "laryngismus paralyticus" of Fleming (a term more in keeping with modern scientific nomenclature, but having one serious defect, its length), was first noticed during the earlier part of this century, when a pallid and wasted state of certain muscles of the larynx of roarers was observed. Youatt, in a work published in 1831, says: "Roaring is due to inflammation; a fluid rapidly changing into a tough viscid substance is thrown out, sometimes running across the larynx in bands. We believe this to be the most general cause of the disease. Much light has, however, lately been thrown on other causes of this complaint. Many roarers have been examined after death, and no vestige of these bands has been found." Youatt then tries to make *post-mortem* appearances fit in with a new theory he held as to the cause of the disease, by saying "the larynx and upper part of the windpipe are materially deformed, crooked, and compressed; caused by the use of the bearing-rein," though nothing is said about wasted or atrophied muscles; but in 1853 Percivall mentions Youatt referring to it in his lectures, published in the *Veterinarian*, as follows: "Some years have now elapsed since it was first discovered that the larynges of roarers occasionally presented the singular phenomenon of the muscles of one side

being wasted away or absorbed.” We may conclude from the foregoing that somewhere from about 1836 to 1850, the atrophy of the laryngeal muscles was first noticed, at any rate in England.

Roaring and its causes was evidently exercising the minds of veterinary surgeons in those days, and I doubt if we know now very much more of its primary cause than they did.

As far back as 1826, Dupuy had published an account of experiments showing that compression or division of the recurrent nerve produced roaring. In 1837, Field, of London, divided the nerve on the right side, in a farm-horse, and produced acute Roaring. After three years he killed the animal, and found the muscles supplied by the divided nerve were atrophied. Barlow, of the Dick College, Edinburgh, also by further experiments confirmed these results.

Division of the motor nerve supplying any muscle is followed by atrophy of that muscle. These experiments prove, 1st, That the crico-arytenoideus posticus, crico-arytenoideus lateralis, arytenoideus, and the thyro-arytenoideus muscles are supplied by the inferior laryngeal nerve (recurrent), because these are the muscles we find atrophied after the division of this nerve, independently of tracing the nerve to its terminations. 2nd, We find that these same muscles are wholly or partially atrophied on the left side in cases of Laryngismus paralyticus, and if the condition be of sufficiently long standing, it is complete; as in the specimen shown, in which not a trace of true muscular tissue remains. Thus far, it is clear that Laryngismus paralyticus is due to a defective or diseased state of the inferior laryngeal nerve. There is still uncertainty as to what is the exact cause or state of this nerve resulting in Laryngismus paralyticus.

In some extremely bad cases, the inferior laryngeal nerve exhibits unmistakable evidence of disease to the naked eye. Mr. Moore tells me of a five-year old Clydesdale stallion destroyed as useless, being such a bad roarer, in which the nerve was deepened in colour and there was effusion along its whole course.

The atrophy is not always confined to the left side; the right is at times also atrophied, but to a lesser degree; whilst cases occasionally occur of Roaring, in which no atrophy is found (Williams supports me in this); it may be due to defective nerve stimulus, but not of sufficiently long standing for the atrophy to have taken place.

Why the left nerve is generally affected may possibly be accounted for when the pathology is better known. The French veterinarians give three reasons why it is most often affected, but to me they are not satisfactory, and can easily be refuted. 1st. The recurrent, after being given off from the pneumogastric on the left

side, passes round the aorta, the pulsation of the artery producing the paralysis. If this were the cause, Roaring would become constant, or at any rate more general. 2nd. As it passes over the bronchial glands at the root of the lungs, enlargement of these glands pressing on the nerve. Cobs and ponies which do not become roars, suffer from affections producing this enlargement equally with larger horses. 3rd. As the nerve passes up the neck on the left side it is more exposed, being placed more superficially on account of the œsophagus. This is also constant. Why should the injuries always be confined to a certain class of animals?

HOW DOES THE ATROPHY PRODUCE THE ROARING?—If you dilate the larynx you will find the vocal cord becomes tense and lies close to the side of the organ; but when the muscles are atrophied they do not draw the cartilages apart, which action tightens and renders tense the vocal cord; hence the obstruction to the passage of the air, and a roaring noise is the result in accelerated respiration.

Fleming dilates on this relaxed vocal cord in his article on "Laryngismus Paralyticus," in the VETERINARY JOURNAL for February, 1882, and in correspondence recently with him *re* Roaring, he says, "I am now working at Roaring, and hope to cure it effectually by a new and simple operation. I have settled its pathology and causation." Possibly the simple operation here referred to may be the removal of the relaxed vocal cord. Whistling is often only modified Roaring.

CAUSES.—Haycock, writing in 1861, speaks of Spooner doubting whether the atrophied muscles were the cause, or the result of Roaring. The primary affection is undoubtedly neurotic, the progressive muscular atrophy secondary. A thorough knowledge of Roaring would imply the understanding of one of the delicate changes taking place in a nerve, so difficult to master physiologically, but producing palpable results in the functional activities. I leave the morbid change in the nerve tissue, admitting a lack of knowledge, and turn to consider the predisposing and exciting causes under the following heads:—

1st, Hereditary. 2nd, Climatic. 3rd, Dietetic. 4th, Accidental.

1st *Hereditary*.—Much attention has been given to the breeding of horses in the British Isles. This, with climate and our love of horses, has resulted in qualities and appearances commanding for them a world-wide fame. On the other hand, considering the haphazard way in which many are bred, it is a wonder we possess such good animals as we do. In a state of nature, the law of "the survival of the fittest" plays an important part; but as the flora is improved by cultivation, so is the equine species.

Breeding may be reduced to a science, but there is a danger that in striving after some form of excellence, we may at the same

time be cultivating a weakness or defect. Let me illustrate this by reference to “Ormonde,” the celebrated racehorse of the Duke of Westminster, with an unbeaten record on the turf, and the most brilliant horse of his day, but he is affected with congenital progressive muscular atrophy of the muscles of his larynx. His dam, “Lily Agnes,” suffers from the same malady, and has transmitted it to her illustrious son, who will again, no doubt, if used for stud purposes, produce a percentage of roarers. If His Grace the Duke will be so advised, I trust that he will sacrifice, and lose the horse’s otherwise brilliant transmissible qualities, rather than increase our stock of roarers. The temptation to the owner of any valuable pedigree animal to adopt the alternative course is obvious.

If we look at horses most affected, you will see it runs in certain strains, and in pedigree stock its hereditary character is most conclusively shown.

Cleveland bay, coaching-like horses, Shire and Clydesdale cart-horses, hunters and van-horses appear to be most disposed to the affection.

A fruitful source of transmission to our half-bred stock has been the use of thoroughbred horses, cast as roarers, becoming country stallions.

In breeding, as we improve the size and conformation, we also increase the tendency to unsoundness of wind. Taking 15-2 hands as a medium height of the horse, we rarely find one under that affected with Laryngismus paralyticus, whilst (with age) when over that height a heavy percentage are unsound. This has been established by investigations undertaken for this paper.

Little horses are very rarely affected, and in offspring from the same parents, if one be small and the other big, the Roaring will be developed in the latter and not the former; but I believe if the small one be bred from and should breed a big one, even if the mate be sound, the tendency to Roaring will return. I have a striking instance in a bay mare, 15-1½ hands high, and which I have, as some of you know, hunted for the last eight or nine seasons; her half brother and sister, 16 hands high, were both roarers, whilst their dam was sound; and “Spoonstealer,” the sire of all, was also a good-winded horse. Size, as affecting Laryngismus paralyticus, is a difficulty, and, as I said with reference to the left side being most often the affected one, possibly a better knowledge of the pathology will be the only elucidation.

Mares are said to be not so frequently affected as entires and geldings, though many mares are roarers.

Climatic.—Next to hereditary cause, I should place climatic; the former as a predisposing, the latter as an exciting cause. I

must here acknowledge my indebtedness to Messrs. Fleming, Meyrick, and others, who have furnished me, both directly and indirectly, with information on this part of the subject. They are all agreed as to its being almost an unknown disease in Eastern countries and hot climates, amongst the native-bred horses. Exception is taken to Egypt, but the horses there are all imported.

For the animal with a predisposition to Roaring, nothing more surely develops it than climatic change. Irish horses brought to England all suffer from the change, and a heavy percentage are left unsound in their wind. Perhaps the exceptions are most often met with when animals are in hard condition, and what horsemen term "very fit," either for racing or hunting. Ireland is essentially a moist climate, and many horses bred there become roarers, but whether from climatic or hereditary cause (the latter I think), or both, I have not been able to thoroughly satisfy myself. The ease with which some Irish horses obtain their pedigree has been a serious obstacle to obtaining reliable information. In Manchester, with its unpleasant climate, the horses suffer from excess of diseases of the respiratory organs. With scarcely an exception, every young fresh horse from the country suffers either from feverish catarrh, Pneumonia, Pleurisy, Bronchitis, Laryngitis, or Strangles. Many of them afterwards are found to be roarers, but it being a flat district they perform ordinary harness and draught work fairly satisfactorily. Their number is doubtlessly augmented from hilly districts, where they are useless. The most serious loss occasioned by Roaring is undoubtedly amongst racing, hunting, high-class harness and heavy draught horses.

In a moist climate with malaria or impure atmosphere, Roaring becomes common, in large horses particularly. It was rumoured that, at the Cape, horses unsound here had become sound there. Against this I place the reply I received from the Principal Veterinary Surgeon to the Army, who says, "Large numbers of the 17th Lancers' horses (English) became roarers during the Zulu war." Mr. Meyrick, C.B., in answer to my enquiries, gives the following as his experience:—"I believe that in Eastern countries, as a rule, Roaring is very uncommon. During twelve years' Indian service, I met with only one case that I can remember, but it was a very bad one. The animal, a remarkably well-shaped Australian horse, had been imported only a short time, and was found to be a roarer immediately after joining a battery of which I was in charge. Whilst looking after various batteries of artillery, regiments of cavalry, and Government studs, as well as while superintending the horse-breeding operations of the Punjaub, I had to inspect stud-bred and country-bred horses in tens of thousands, Australians in hundreds, and a few scores of horses

from Cabul and Central Asia, besides many hundreds of Arabs and Persians. Among all these, as before remarked, I never met with one roarer except the Australian. It is, of course, just possible that some might have been affected, but so slightly as not to attract the attention of the officer in charge of them. Egypt seems to be a remarkable exception to the rule. There Roaring is far more common than in England. In the streets of Cairo, Arab or Syrian horses can be heard to roar while drawing the carriages of the gentry. Shortly after our army reached Cairo at the latter end of 1882, a severe form of Fever, resembling Anthrax in many respects, broke out amongst the horses, many hundreds of them being attacked. Within two or three months after this outbreak subsided, it was found that an extraordinary number of the horses had become roarers. All except a few had been treated for the Fever, and I am inclined to think that these few had also been affected, but in so slight a form as to escape notice. In some cases the only symptoms observable were a quickened pulse and breathing, with a yellow tinge of the mucous membranes and loss of appetite. As more than half of the private soldiers, and likewise the veterinary surgeons, were in hospital, those left had so many animals to attend that slight cases of illness might easily have been overlooked. On making *post-mortem* examinations of some of those which died, I found infiltrations of lymph in various parts of the body. Possibly the Roaring may have been caused by the pressure of some of these deposits upon the nerves supplying the larynx. I afterwards found that a similar fever is present nearly or quite every year in Egypt, and it may perhaps be the cause of the Syrian and Arab horses there so frequently becoming roarers. The cause of the fever I believe to be malarious, depending upon the annual overflow of the Nile, and aggravated by the absence of sanitary arrangements throughout the country. After several months, many of the roarers completely recovered, while others remained in the same condition or became worse, and had to be cast from the army. I found many instances of horses being cast for Roaring more than two years after they returned to England, so gradually did they deteriorate. Small horses are, according to my experience, less frequently affected with Roaring than large ones. In Egypt, it may be said that, practically, all horses are imported, the country being so ill-adapted to them that few are bred in the cultivated parts. In the deserts the Bedouins breed some, but the desert can hardly be called Egypt proper. I never met with a case of hereditary Roaring in India, there being no roarers among either the stallions or brood mares of the studs to which I was attached.

“I should add that I have only served in the Bengal Presidency, but have been in every part of it from Calcutta to Peshawar. Mr.

Steel, late I.V.S., served in Bombay, and I understood him to say that he had met with a few cases of Roaring in that Presidency; but he quite agrees as to the general exemption of Eastern horses from it. It is certainly remarkable that I did not meet with any Roaring among the stud-breds, because Strangles is said to be one cause in England, and that disease used to prevail in a severe form in the Government studs of Bengal (owing to the large number of young stock collected in them), in spite of most ample ventilation and other sanitary measures. Veterinary Surgeon Glover, of the Veterinary Department, tells me he knew a few instances of Roaring among the Australian racers in India (called Walers), but he had never met with Roaring among stud-breds or country-breds."

In the VETERINARY JOURNAL for July, 1887, R. Spooner Hart, of Calcutta, holds that "Roaring is the result, in the majority of instances, of exalted body temperature, such as occurs in hunters and race-horses during training and galloping, and in the class of cases known as Thermic Fever (sunstroke). Both Roaring and 'gone in the loins' are common sequelæ of such attacks, and are specially liable to result from training in clothing. Roaring is very common in Calcutta, and is most often observed in the coarse-bred horses which can least withstand the heat, and seem to be constantly in a state of fever." If this be correct, they must have imported to Calcutta, along with the coarseness, Roaring.

The Roaring resulting from sunstroke should not be confounded with hereditary, progressive, muscular atrophy, which is found in the Australian horses, and is inherited from their ancestors of British and European origin. This hereditary form is most common in the west, where the breed of horses is larger, and is gradually extending east, *viâ* the Antipodes.

Dietetic.—A plethoric state is dangerous in all cases in which there is the hereditary taint or predisposition on account of size. Hunters, if turned out to grass for the summer, often come up roarers; it also supervenes in heavy draught horses after a run at grass. I incline to the opinion that these cases are rather due to the changes of temperature and heavy dews, than to dietetic causes. For some time they have been housed in warm stables, and possibly clothed. It is a great change to the varying temperature of even our summer weather. There is not the same danger if summered in a box, although the diet be green food.

Roaring is found associated with disease of the nervous system, whether due to climatic or dietetic causes. Many of you will remember the cases in Messrs. Leathers' practice, caused by eating "mutters," and in which the laryngeal paralysis was fatal, if the operation of tracheotomy was not performed early in the attack.

TREATMENT.—The treatment (if any be adopted) of Roaring will depend entirely on the cause.

Where it is due to deposition pressing on the nerve, if this be absorbed, and the nerve resumes its functions, the Roaring will cease. Thickening of mucous membrane may also become absorbed.

Those of us who have examinations as to soundness of hunters and race-horses will readily call to mind cases of “wind” which are sound one day, and on another day they make a slight noise, ultimately, in my experience, terminating in chronic Roaring. If treatment of any kind is to be tried in progressive muscular atrophy, these are the cases in its earlier stages.

Nervous affections of similar character in the human subjects are some of them, by means of long, tedious, and persevering treatment, cured or relieved; but it will rarely be found satisfactory in our cases.

Fleming recommended electricity in the shape of Faradisation, and potassium internally, and quotes two successful cases. He has also tried with “Ormonde.” I asked him the question: “Has the treatment of ‘Ormonde’s’ case been successful?” and received the following reply: “Not entirely, but it enabled him to win his two races at Ascot in 1887. He might have gone on running, but the Duke of Westminster feared he might be beaten, and this would have spoiled his victorious record.” It is all summed up in one word—unsatisfactory. Treatment of hereditary muscular atrophy is useless; it is to me like building a tower crooked, and then trying to straighten it. Clearly and unmistakably hereditary, no animal unsound in wind should be used for stud purposes. Let this fact become engraven on the minds of horse-breeders, and in that will be found the rational and only satisfactory treatment of Roaring.

CONCLUSION.—Roaring or Laryngismus paralyticus is due to progressive muscular atrophy of neurotic origin.

It affects big horses.

It is hereditary.

The best advice is not to breed from diseased stock.

It may come on gradually, without any specially exciting cause; but it oftener follows diseases of the respiratory organs, due to climatic conditions or changes, especially if animals are in a plethoric state.

Once established, climate does not affect it.

TRACHEOTOMY IN CONFIRMED ROARING.—Mr. Jones, V.S., of Leicester, exhibited his patent tracheotomy tube, and described several cases; also his method of performing the operation.

RUPTURE OF THE RECTUM, AND PROTRUSION OF THE UTERUS AND URINARY BLADDER THROUGH THE ANUS, IN A NON-PREGNANT SOW.

BY HENRY GRAY, M.R.C.V.S., CALVERTON, NOTTS.

ON Sunday, January 22nd, 1888, I was called to attend a young sow, aged thirteen months; reported, "having put down her seat." On my arrival I found the animal lying stretched out on her left side, straining and grunting—in fact, in the same manner as though she were "pigging." Protruding from the anus was a red and inflamed mass of viscera, which reached as far down as to the hocks, when standing. At first sight, I mistook the protruded organs for a portion of the small intestine. On examining it, I found it to be the uterus and urinary bladder, as far as the meatus urinarius.

The urinary bladder was filled with urine, which I evacuated, by puncturing the organ near the cervix vesici, with a pair of fine-pointed scissors. After passing the points of the scissors into the bladder, I slightly opened the blades, to prevent the opening closing and to allow the urine to escape. I then tied a rope over each hock and suspended the animal to a beam. On examining the rectum I found a small rent on its floor, within an inch of the anus. As the wound was too small to allow the swollen organs to be returned into their natural cavity, I resolved to amputate the uterus. I cut through the broad ligaments with a pair of scissors, and then tied a fine ligature around the neck of the womb within an inch of the meatus urinarius, and excised the organ with a sharp knife.

After washing the remaining portion of escaped viscera with tepid water and dressing it with carbolized oil 1:30, I returned the urinary bladder, etc., into the pelvic cavity, by pressing gently on the floor of the vagina with my right hand, and pushing the bladder through the rent in the rectum with my left hand. The animal was let down, and she walked to her sty and vomited.

The animal partook of food, etc., and seemed on a fair way towards recovery, when the owner being impatient, had her killed on the fourth day. I did not make a *post-mortem*. I ascribe the cause of this—to me, a rare case—to the straining caused by constipation.

I may also mention that I treated the same animal for Prolapsus of the rectum on January 14th, 1887, occurring fourteen days after the weaning of her litter. About two feet of the rectum had protruded and was ulcerated. It was returned and held in its position, by passing three interrupted sutures of tape through the anus. There was no recurrence of the Prolapsus. The animal

had been fed sparingly and improperly. She was weak and emaciated, but quickly improved in condition on being fed better.

Prolapsus of the anus and the rectum is of common occurrence amongst swine. It attacks animals of all ages and in all conditions, but principally ill-fed animals.

SCARLATINA IN HORSES.

BY E. A. W. HALL, M.B., C.M. ED., 2ND BENGAL CAVALRY; AND R. W. BURKE, A.V.D., SAUGOR, CENTRAL PROVINCES, INDIA.

SCARLET FEVER in horses is believed to be a comparatively rare disease, except as a sequel to some other debilitating disorder. It has been witnessed as a more or less prevalent disease of horses in the Second Bengal Cavalry, stationed at Saugor. We may, therefore, describe a few typical cases only, to show the leading characteristics.

The first case we shall describe is that of an officer's charger. She started with slight nasal catarrh and a cough, with weakness and distaste for food; a week after she showed œdema of the legs, commencing at the fetlocks and proceeding upwards; on the third day of the œdema there were small petechial extravasations in the mucous membrane of the nose, and an icteric tinge of the conjunctivæ: the temperature that evening, the 20th January, was 105° F.

21st, morning.—Temp. 104°; the extravasations had united and run into each other in several places, and the swelling of the legs had become worse: evening, state the same.

22nd, morning.—Temp. 102°. Evening, temp. 103°. Mucous membranes of a bright-red colour; cough and catarrh still marked, but no sore-throat.

23rd, morning.—Temp. 101°. Evening, temp. 102°. Condition of animal remained the same till the 26th, after which the temperature became normal and did not go up again.

The rest of the history is one of slow and gradual improvement. The legs remained swollen for a long time; the swellings lessened towards evening, but in the mornings was always worse.

Nand Lall's horse.—After the catarrh and cough had been present for a few days, an eruption, which the *salootrie* characterised as "Urticaria," broke out over the whole body. After three days this eruption disappeared, but petechial spots on the mucous membranes and œdema of the legs appeared, as in the case above described. The highest temperature recorded was 104°, remaining for twenty-four hours.

Pony.—The whole of the face was found to be very much swollen. Petechiæ appeared, on the conjunctivæ especially, the

latter becoming much inflamed and dark in colour; and, finally, the eyes and eyelids swelling from inflammation, the eyes were closed; there was inflammation of the cornea and hæmorrhage from one eye, which sloughed, the whole eye coming away, leaving a hollow; the other eye partially recovered. Petechiæ also appeared on the mucous membrane of the nose, with catarrh. There was patchy extravasation of the buccal mucous membrane, and sloughing of mucous membrane of the whole of the mouth, with difficulty in feeding. The animal became gradually weaker and weaker in spite of all nourishment and treatment prescribed, and was given away to a *fakir*; it died shortly afterwards.

The above case is interesting in association with corneal ulceration, noticed in Scarlatina of the human subject.

The regiment left Saugor on Feb. 7th, and marched fifteen miles. On the 8th marched fifteen miles into Rarawan, where it encamped. The same evening a horse showed some swelling of the hind fetlocks, and received fomentations and walking exercise, which reduced the swelling. On the 9th the swelling had subsided; 10th, œdema increased; 11th, came into Saugor, thirty miles; when it arrived the swelling had almost disappeared; 12th, enormous swelling of all four legs, extending to the body; epistaxis of watery blood; temperature, 102°. Evening, epistaxis stopped, after continuing the whole day. Petechiæ now observed in irregular patches on Schneiderian mucous membranes; small eruptions on the swollen limbs. 15th, there was no catarrh and no cough, and the temperature also was normal; but the eruptions on the legs had coalesced, forming large irregular patches of swollen skin, from which sloughs had resulted in different places.

The foregoing cases are all of them typical, and afford between them excellent illustrations of most of the more diagnostic characters of Scarlet Fever in man. But though, as we have in the above cases shown, the similarity between human and equine Scarlatina will be admitted by many practitioners, we must not be unmindful that experience has clearly shown us that Scarlet Fever in the horse is not generally so severe as the same affection seen in man, and more frequently assumes the benignant form than it does in the latter patient. The lesions of Scarlatina are, as a rule, various; but, on the other hand, individual peculiarities seem, in our opinion, sufficiently to account for this, as witness the occurrence of "tubercular" Phthisis in one member of a family, and "fibroid" Phthisis in another. The difference between man and the lower animals imparts to the tissues the alterations in their molecular disposition to the disease.

ABNORMAL RETENTION OF THE FŒTUS.

BY J. MCGAVIN, M.R.C.V.S., MONTGOMERY.

ABOUT this time last year I was called to a farm where there is a herd of pure-bred Hereford cattle, one of which could not calve. On inquiry I found she had been fed in the same manner as all the herd, viz., on hay, straw, and a few swede turnips, and was in fair stock condition. She had gone between four and five weeks beyond her normal time; her udder was very small; and the cowman informed me she had been about twenty-four hours in labour.

On examination, I found the vagina had not relaxed, nor the os uteri dilated; so that it admitted my hand with difficulty. The membranes were intact, and at times she was straining very hard. I waited for several hours, and, as labour did not progress, I thought it advisable to leave her until morning.

On arriving next morning at nine o'clock, I found the membranes had just ruptured, and she was straining very hard. The vagina was much in the same condition, and the os uteri was about an inch larger than when I examined her the previous night.

The presentation was natural, and I found the calf was very large. I decided to perform embryotomy—very difficult under those circumstances. However, after removing both fore legs, and attaching a rope round the neck of the calf, with the assistance of ten men, I could only get out the neck; so I had to remove the contents of the thorax and abdomen, which were all very large, and after very severe pulling we extracted the calf, but the cow died.

Three weeks afterwards, another cow was in the same condition, and we performed the same operation with the like result.

I have since heard that three more cows were affected in the same way, and died undelivered; and the gentleman who so informs me states that he has had four cows this year in a similar condition. Some of the calves were alive up to the commencement of labour, and others had not been long dead. There was no decomposition; all the calves were very large, and the water-bags very small. Two of the cows were primiparæ; the others had all one, and some two calves before.

I have never had any similar cases before, and I have consulted two veterinary surgeons on the subject without receiving any information, as they also have never had any experience of such cases.

I have also consulted Fleming's "Obstetrics," but there is no suggested cause there that I can ascribe for it.

I should be glad if some of the readers of the Journal would inform me if they have met with similar cases, and how they

treated them, what they assign as the cause of the condition, and how it could be prevented.

I am aware that chloral and chloroform are given in those cases, but I did not adopt that treatment.

EPILEPSY FROM PROPAGATED IRRITATION.

BY T. ASSHETON-SMITH, M.R.C.V.S., CALCUTTA.

THE following case of Epilepsy from propagated irritation may prove interesting to the readers of the *VETERINARY JOURNAL*:—

The patient was a bay Australian gelding, aged eight years. He had been subject to the fits for some eighteen months, but at first they were mild, and the intervals between them prolonged; so the animal was kept at work, and on one occasion was attacked while in harness. He came to a standstill, and staggered a good deal, but did not fall.

Subsequently the seizures increased in severity, until all the distressing symptoms of the disease were developed, and he scarcely recovered from one fit before another supervened. Under these circumstances I had him destroyed.

On examining the body, in the double colon, below the sigmoid flexure, I found a large enchondromatous tumour, roughly kidney-shaped, and attached at the hilum to a point on the mucous lining of the bowel, which had become elongated and twisted to form a peduncle. The tumour, which weighed more than ten pounds, had thus considerable freedom, and must have been a source of great irritation to the system.

On making a section of the tumour, I found that the central portion had undergone metamorphosis into true bone, resembling cancellated bone tissue; a space existed between the bony core and the cartilaginous shell, which was occupied by greenish purulent matter with a very offensive odour—no doubt a product of some degenerative process, and I believe the epileptic symptoms were largely due to the escape of this material through perforations in the cartilaginous outer covering into the bowel, and absorption into the blood.

Some medical practitioners in this city, to whom I showed the specimen, concluded that the growth was congenital; but I cannot reconcile this opinion with the late appearance of the symptoms.

Strange to say, during life the animal exhibited no sign of bowel trouble.

Editorial.

THE ANTI-VIVISECTIONISTS AND PROTECTIVE INOCULATION.

FROM questions and answers put and given in the House of Lords, and the report of latest proceedings at the Monthly Council Meeting of the Royal Agricultural Society, it is evident that a grave error has been committed in introducing into this country protective inoculation for the serious disease known as "Black Quarter." The utility of this measure had been amply confirmed in France by its introducers, Arloing and Cornevin, and in other countries by eminent veterinarians, long before it was thought of in England. Therefore there was no occasion to resort to what is termed "experimentation" here, in order to ascertain what might occur from inoculation with virus prepared according to the method devised by its authors; the results of this inoculation were already well known. But when the Royal Agricultural Society determined to try to protect cattle from Black Quarter in this way, experiments were decided upon, and a great fuss made over the matter, as if a new and most important physiological or pathological investigation, necessitating experiments on animals, was about to be carried out. In this lay the mistake; for in order to have the "experiments" conducted in a legal manner, the Royal Veterinary College had to be licensed by the Home Secretary as a place in which to perform them, and its Principal as the experimentalist. Not only did the application for these licenses require much time and occasion a good deal of trouble, but it attracted the attention of the anti-vivisectionists, who are always on the outlook for cruel men of science. The consequence has been that much embarrassment, delay, and annoyance arose; the late Professor Robertson's assistant in the so-called "experiments," has narrowly escaped a criminal prosecution, because he was not a licensed person; and deputations to the Home Secretary, official correspondence, and suspension of a most beneficial operation, have been reported.

Now there cannot be a doubt that there was no occasion whatever for either experimentation, in the proper sense of the term, nor for licensing either place or operator. The Privy Council has bungled over the business quite as much, if not more, than the Royal Agricultural Society. Inoculating an animal to prevent it being attacked by disease is no more experimentation than giving it a dose of medicine to ward off the same disease, or to cure the creature when it is ill. Vaccinating children to prevent their having Small-pox is not experimentation, nor do the vaccinators require licenses from the Home Office.

For very many years cattle have been inoculated in this country to protect them against contagious Pleuro-pneumonia, and licenses to enable veterinary surgeons to inoculate them have never been thought of.

The Privy Council and the Royal Agricultural Society have simply

created an obstacle for themselves, and left the Home Office and the anti-vivisectionists to make the most of it as an aggressive weapon to demolish preventive medicine. We do not require to appeal to the Home Secretary for permission to try or adopt new medicinal remedies for the cure of disease. Inoculation for the prevention of Black Quarter, Swine-plague, or any other disease, is altogether beyond the scope and interference of the Home Office and anti-vivisection societies; and if the operation is stopped, or the operators annoyed or restricted in any way, it is their own fault, or that of those who should see to it that animals receive the full benefit of scientific protection from scourges which cause them great misery and suffering, and the public much loss.

The Vivisection Act was originally intended to guard against the infliction of cruelty on animals by needless experimentation, or through experiments performed by men who had no definite object in view, or were incompetent to procure beneficial results from their attempts. It must not be allowed to prevent the adoption of measures—protective or remedial—which have for their object the prevention or cure of disease. Inoculation as a test for Glanders or Rabies is not an experiment, and its adoption may in many instances save many lives, not only of animals, but of human beings. Veterinary surgeons and medical men have been labouring under an incubus, without the slightest excuse. Licenses from the Home Office are not needed for them to practice their humane and beneficent profession, and inoculation—whether as a test of the presence of disease or as a protection against it—is certainly a part of their professional duty.

Had the Royal Agricultural Society and the Privy Council been aware of this, and acted accordingly, they would have been spared much trouble and delay. It is not yet too late to cut the Gordian knot, which they themselves have tied, by going on with the inoculations without reference to the Home Office, or heeding the anti-vivisectionists, who care not how much suffering and loss may be caused by animal diseases, so long as they are allowed to ride their hobby at their own pace and to their own fancy. They have been a great deal too much considered in this country, and in this instance, through some strange aberration of ordinary intelligence, they have had it all their own way. Surely it is time to exercise common sense!

THE POTATO AND THE DIAGNOSIS OF GLANDERS.

BY PROFESSOR ALPH. DEGIVE, BRUSSELS VETERINARY SCHOOL.

WHAT can be more strange, at first sight, than the association of these two things—Glanders and the potato? It might be considered one of those strange combinations of words and ideas sometimes used by the author of *Feuilles d'Automne*.

What connection, in fact, can there be between the potato and Glanders? This affinity is not difficult to be found by those who are familiar with the study of the infinitely little.

These know that the potato is not only enjoyed by the *macrobes* of various species, but that it is also a dainty morsel for a great number of *microbes*.

Among the latter may be mentioned the specific micro-germ observed by MM. Bouchard, Löffler, and Schütz in the Glander-Farcy lesions.

This micro-germ has not only been verified in the lesions themselves, but it has been isolated by culture, and inoculation with the cultivated microbe has reproduced the malady with all its typical characteristics.

The sympathy which exists between the microbe of Glanders and the potato has just received a very useful application in the diagnosis of the Glander-Farcy affection. The fact has been communicated in the following terms to the Société Centrale de Médecine Vétérinaire, December 30th, 1887, by M. Nocard, Directeur de l'Ecole d'Alfort:—

The best means of cultivation of the bacillus of Glanders is undoubtedly the potato. In fact, it is known that many microbes have the singular property of germinating on its surface, and forming colonies of various colours, each species maintaining its own tint.

The Glander bacillus multiplies very rapidly on its surface, producing a sort of thick, moist, viscous layer, reflecting after some days—as may be seen by numerous specimens—a tawny colour, which gradually becomes darker until it is of a bright chocolate tint.

Of all the known microbes, the Glander bacillus alone assumes this appearance; it is absolutely characteristic, and is sufficient by itself to prove that the product sown was glanderous.

This proceeding is doubly precious, because it allows the glanderous colonies to be distinguished in the midst of a great many others of different kinds, and especially because it is within the reach of all.

This is the best way to proceed to grow these colonies. Begin by cleaning the potato without injuring the skin, then plunge it in a solution of corrosive sublimate (1 to 1,000) for one or two hours, in order to destroy the germs which exist on its surface. Then, after dividing it, place each portion in a glass receiver furnished with a lid, or, if this cannot be had, in a bowl covered with a plate, which must be submitted to the vapour of boiling water for one or two hours, so as to cook the potato and destroy all the germs which may still pollute it.

This done, the lid must be raised obliquely, to prevent the germs from the air falling upon the potato; then the Glander product, which must be carefully diluted with a large quantity of distilled or sterilized water, must be spread over the surface by means of a small pipette.

After a few days a great number of colonies of different appearances will be developed, among which those of a tawny brown are characteristic of the Glander bacillus.

I have quite recently had an opportunity of applying these principles to the condition of a man suspected of Farcy, about whom M. le Dr. Bucquoy wished to consult M. Leblanc and myself. MM. Bucquoy and Leblanc were clinically convinced of the existence of Farcy, but M. Bucquoy wished to have positive proof.

I beg to be allowed briefly to relate the result of the experiments which I made for this purpose; they carry their own teaching.

FIRST SERIES.

A. Experiments.—October 13th.—Several centimetre cubes of pus were collected in sterilized tubes.

October 15th.—This pus served for the inoculation of—

1st. Two dogs, by scarification on the forehead.

2nd. A guinea-pig and a rabbit by hypodermic injection.

3rd. A guinea-pig by intra-peritoneal injection.

October 18th.—The same matter was diluted and sown with the accustomed precautions on the surface of three potatoes prepared *secundum artem*.

B. Results.—First, *Dogs*.—The inoculated surface did not at any time present the least trace of ulceration. The scarifications healed rapidly. The skin remained supple, and was not discoloured. Negative result.

Second, *Guinea-pigs and rabbits*.—Nothing abnormal was observed until October 26th, when the inoculated guinea-pig, which had been inoculated beneath the skin of the thigh, had the crural glands tumefied and indurated; in fine, nothing characteristic.

November 5th.—The guinea-pig inoculated beneath the peritoneum was found dead. It was very emaciated; voluminous abscesses were developed in the sub-lumbar glands; spleen ten times its natural volume, and studded with miliary tubercles; the lungs showed a small number of cheesy tubercles.

November 9th.—The guinea-pig inoculated beneath the skin died, offering identical lesions. At this date the rabbit had only induration and central suppuration of the crural glands.

Third, *Potatoes*.—On October 21st, on one of the pieces of potato there were four round prominent colonies, of a faint tawny colour, and which gradually became darker, until on the 23rd they assumed the appearance characteristic of the Glander bacillus. Microscopic examination and further cultivation of them on gelatine and jelly left no doubt on the subject.

To sum up: In this first series the cultivation of the germs on the potato gave the earliest confirmation (in five days) of the diagnosis of Glanders.

SECOND SERIES.

A. Experiments.—October 27th.—Pus was again taken from the same invalid.

October 29th.—The pus was employed to inoculate—

- 1st. An ass and a dog, both vigorous, by scarification on the forehead;
- 2nd. Two adult guinea-pigs, by scarification on the croup;
- 3rd. Two potatoes.

B. Results.—First, the ass. She remained lively until November 1st; ate with good appetite; normal temperature 38.4° Cent.

November 2nd.—Temperature 40.2°; appetite diminished.

November 3rd.—Same condition. Until this date the scarifications do not appear to have been the seat of any pathological change; only a slight sensibility observed when pressed upon.

November 4th.—A slight red serosity issued from the scarifications on pressure; appetite gone; extreme weakness.

Death occurred during the night of the 5th-6th November.

Post-mortem.—Inspection at one o'clock on the 6th. Formidable lesions of acute Glanders in the two lobes of the lungs, the spleen, and the bronchial glands; a considerable number of Glander bacilli were found in them, and they were also discovered everywhere in the marrow of the bones.

Second, the Dog.—*November 3rd.* A slight oozing was observed at two points of the scarified surface.

November 4th.—Small wounds and appearance of ulcer.

November 5th.—Condition stationary.

November 7th.—The ulcers had completely disappeared.

To sum up: Nothing demonstrative.

Third, *Guinea-pigs*.—Nothing noteworthy, except a little thickening and sensitiveness at the points of inoculation and a little swelling of the crural glands.

Fourth, *Potatoes*.—So early as November 1st they exhibited numerous colonies characteristic of Glander bacilli.

These experiments show:—

1st. The great superiority of the ass as an agent to prove the existence of Glanders.

2nd. The great service which may be derived from the cultivation of Glander matter on the potato, in order to confirm the diagnosis in doubtful cases of this disease.

The experiments also seem to prove that the Glander virus becomes somewhat attenuated in its passage through the human organism (or at least it was so in the case of this man), since in three attempts on the dog—a most valuable agent for testing the existence of equine Glanders—it was almost completely refractory to inoculation.

The above does not contain the whole of the communication made by M. Nocard to the meeting of December 24th. The first part, besides describing the characters of the test inoculations for Glanders upon the ass, the dog, the guinea-pig, and the rabbit, gave indications for the best method of procedure for microscopic examinations, and for obtaining the pure cultivation of the Glander bacillus.

Test Inoculation.—What I have already said on various occasions on this subject enables me to dispense with further discussion. I will only observe that M. Nocard speaks of test inoculations, without making a single reference or quotation, as if no one before himself had studied the subject. It would not have been waste of time for him to have given due credit to the labours of, among others, MM. Reul, Cadéac, and Malet, in indicating, simplifying, and popularising these valuable operations.

I will add that I consider the proposition formulated by the director of the Alfort School, concerning the vulnerability of the ass to the action of the Glander virus, far too absolute. "The ass," says he, "is so favourable a medium for the development of the action of Glander virus, that in it the malady soon assumes a very acute form, and causes death in an interval of from *five to twenty days at most*; and that *if this animal resists a good inoculation the non-existence of Glanders may be safely inferred.*"

On this subject I will relate the observation made in the clinic of Cureghem in 1879, on an ass inoculated, by means of a seton, by scarification, and by intra-peritoneal injection, with different matters taken from a horse suspected of being affected with Glanders.

It was not until a month after the first inoculation, and about three weeks after the last, that there appeared a phlegmonous Adenitis, which was incompletely cured, leaving a slightly indurated swelling.

Then only *a month-and-a-half later*—that is more than two months after the intra-peritoneal injection of the suspected matters—unequivocal symptoms of *acute Glanders* were developed, which killed the animal in a few days. At the autopsy, pulmonary neoplastic lesions, of more or less duration, were found; these were composed of a homogeneous, greyish-white tissue imbedded in the pulmonary tissue, which was but little altered.

Cases of this kind, I admit, happen exceedingly rarely. But however rare, the exception is possible, and it suffices to prove that if an ass resists a well-made inoculation twenty days, we are not at liberty to conclude as to the non-existence of Glanders. The result would afford a *strong presumption* that this is the case, but it is not completely certain. Two or three negative inoculations like that described by M. Nocard would be necessary for this purpose.

M. Nocard inoculated the dog by scarifications on the forehead. He preferred to employ hypodermic inoculation on the guinea-pig. By the aid of a Pravaz syringe, he injected under the skin a small quantity of suspected liquid, diluted with distilled water.

M. Nocard says, if the guinea-pig is sacrificed in twenty-five or thirty days after inoculation, there will be found always a vast number of small white points in the spleen, often also in the liver and lungs; these are nothing else than miliary tubercles of a glanderous nature.

I acknowledge that with the guinea-pig the injection under the skin succeeds more frequently than the dermic inoculation by scarification; but, nevertheless, I consider this last ought to be chosen rather than that adopted by M. Nocard.

It is very rare that the deposit of Glander matter in superficial cutaneous incisions does not cause the development of the characteristic ulcerous lesions after eight or ten days, that is to say, in three times as short a period as by the hypodermic operation.

Microscopical Examination.—"The microbe of Glanders," M. Nocard calls to mind, "is a rather larger bacillus than that of Tuberculosis, a bacillus which is readily stained by aniline. In order to colour it, instead of using distilled water as a solvent, it is necessary to use an alkaline solution (ammonia 1 to 200, or potash 1 to 10,000), which facilitates the impregnation of the microbe by the colouring matter. Again, it is necessary that the microbe be young, for if it proceeds from a culture lasting some days it only colours in points, which might cause us to believe in a series of micrococci, if higher magnifying did not show its continuity. The following is the best way of proceeding to obtain a good preparation of the bacilli of Glanders. Spread on a plate a thin layer of virulent matter; let it dry; then pass it rapidly through the flame of a spirit lamp. After this, place the plate for five minutes on the surface of the colouring liquid, composed as follows: Solution of potash (1 to 10,000) 3 per cent., and alcoholic solution of methylene blue 1 per cent. Then wash the plate in a solution of phenic acid 1 to 200; afterwards wash in distilled water, and dry it; then mount it in balsam.

"If it is now examined in the microscope and magnified 800 to 1,000 diameters, there are seen a great number of more or less long, very granular bacilli, with rounded extremities.

"This only applies to the discharge or the pus derived from a case of Acute Glanders running a rapid course, *for the lesions of chronic Glanders rarely contain visible bacilli*. This rarity of microbes in old lesions is probably because the bacillus of Glanders very soon loses its bacillar form, and resolves itself into granules or spores, which are very difficult to be distinguished from the numerous proteic granules existing in tuberculous tissue."

Cultivation.—The great difficulty of cultivation consists in the impurity of the Glander products; discharge or pus contain, in fact, a variable number of different germs at the same time as the bacillus. The best means of easily obtaining a pure cultivation is to produce Acute Glanders in an ass, or better, in guinea-pigs. The sowing is then accomplished by spreading on the surface of a nutritive solid medium—gelatine or jelly, for example—fragments of spleen, in which myriads of bacilli usually swarm. It is always necessary to sow several tubes at the same time.

"After a few days, the seed has multiplied in the form of a white and semi-transparent thin layer, reflecting a slightly bluish tint. This gradually becomes thicker, and soon quite opaque. The tubes of jelly may be laid on a stove, at a temperature of from 35° to 38°, and the cultivation then takes place much more rapidly in twenty-four, or at most forty-eight hours."

PROTECTIVE INOCULATION FOR STRANGLES.

So long ago as 1823, we find that Toggia, of Turin, in a booklet entitled "*Sul Cimurro e sull' Utilità dell' inuesto di questa Malattia*" (on Strangles, and the Utility of Inoculation for that Disease), published in 1826, in recognising the contagiousness of the disorder, also discovered that it could be inoculated, and that such inoculation was protective against natural infection. He states that, when veterinary surgeon to a stud of horses in 1823, he in-

oculated eight healthy colts with matter derived from a horse in the second stage of Strangles; and, afterwards, six other colts with the nasal discharge taken from the first.

Four days subsequently, there was observable in some of them a slight cough, followed, firstly, about the seventh day by a slight discharge of mucus, which, however, flowed more abundantly when the animal coughed; secondly, by inflammation of the submaxillary lymphatic glands on the same or the eighth day; and, lastly, spontaneous opening of the abscesses in these glands about the fourteenth day.

He considered that the symptoms observed, however mild they appeared to be, were sufficient to prove that by this inoculation he had communicated the disease to the colts; and upon this fact he founded the conclusion that Strangles is a contagious affection, *sui generis*, and capable, therefore, of transmitting itself the same as by inoculation. The malady which he thus communicated, he asserted to always manifest itself in a mild and benign form. Since these first experiments, and during two-and-a-half years, he inoculated in the same manner twenty-four colts. The result of these additional experiments still more confirmed him in the belief that such inoculation is proper to protect young horses from what he called "spontaneous Strangles," as none of those which had undergone the operation had developed the disease naturally.

Having been transferred to another stud, Toggia much regretted that his new duties not only prevented him from continuing his experiments, but also from submitting colts already inoculated to the counter-test of re-inoculation, in order to assure himself that they had really acquired by it immunity from accidental infection.

In conclusion, he drew the attention of veterinary surgeons to the results he had obtained, and which, if they were verified by greater experience, would lead to Strangles being considered as analogous, in many respects, to human Small-pox, and to Scabies in sheep (the *sarcoptes ovis* had not then been discovered).

It may be noted here that Solleysel, in the seventeenth century, compared Strangles to Small-pox.

THE HISTOLOGY OF THE SKIN OF THE HORSE.*

BY FRED SMITH, M.R.C.V.S., PROFESSOR, ARMY VETERINARY SCHOOL,
ALDERSHOT.

So far as I am aware, the minute anatomy of the skin of the horse has never before been described. On some points the information I have given is by no means so complete as I should have liked, but it is hoped that the article may help to fill a void in veterinary literature.

It need hardly be said that the skin of the horse, generally speaking, differs in no essential respect from that of man; there are, however, some individual peculiarities to which we must devote especial attention, whilst those points which are the same in both animals will receive but little notice. Skin will differ in quality in different horses. In the race-horse, for instance, we have a skin particularly thin and delicate, the hairs which grow on it are very short and fine, and even the long hairs of the mane and tail are scanty and short. As we pass through the different degrees of breeding until we arrive at the cart-horse, we observe that the skin gets much thicker, coarser in texture, the hairs very much more abundant, coarser, longer, and even growing in profusion in parts which on the thoroughbred horse are barely

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covered by hair. The production of an abundance of hair, particularly if curly, and a thick skin are signs of underbreeding.

It would appear almost superfluous to say that the horse changes his coat twice a year—viz., at spring and autumn; in the former case he loses a warm for a fine short coat, and in the latter he gets rid of his fine coat for a long and often shaggy one. This changing of the hair is a point of considerable interest, and one to which especial attention has been directed in our histological inquiry. Apart from its scientific usefulness, a knowledge of skin function as learned by the microscope has its practical bearing. Horse-owners know that at the season of moulting horses are not so fit as they should be, and one of the most common excuses made for horses looking poor in spring and autumn is that they are changing their coats.

One of the indications of a healthy animal is the feel and appearance of his skin. It should be supple, smooth, glossy, and move freely over the subcutaneous tissues. One of the earliest signs of ill-health is often afforded by the skin; the horse, as it is termed, "looks wrong in his coat"; it is either "staring," or else, instead of moving freely over the ribs, it feels as if glued down to them (hide-bound).

The skin differs in appearance, depending upon its position. Around the lips it is closely attached to the muscular structure below, and the whole feels one compact mass; we also notice that the hairs are here few and fine, but that we have also growing out from the skin long and very fine hairs, commonly known as feelers or whiskers. Behind the angle of the mouth the skin is exceedingly thin and supple, and is nearly the thinnest in the body; over the head and cheeks it is thin and never has fat beneath that part covering the external masseter muscle. On the sides of the neck the skin is still thin, but at the crest where the mane is growing it becomes much thicker, and is subcutaneously much confused with the fatty mane; down the front of the chest and inside of the forearm the skin is particularly thin and very lax; over the scapular region it becomes thicker and more firmly attached below, and over the back and loins we have the thickest skin found; it is also thick down the quarters, but inside the thigh and up to the groin is the thinnest skin covering the body; the skin over the limbs is of medium thickness. If the hair be removed from a horse's body it will be found that the colour of the integument approaches that of the negro; the epidermis is black or bluish-black, excepting in those places where there are white hairs, and here the integument is pink; the colour of the skin in what are usually called grey horses is black or bluish-black.

From what has been said we may conjecture that though the skin of the horse is divided as in man into dermis and epidermis, and contains glands, vessels, nerves, etc., yet these parts will present different appearances depending upon their position in the animal body.

The *corium* consists of a dense network of fibrous tissue, the fibres forming meshes; the latter at the upper portion of the skin are small, the fibres running generally parallel or interlacing so as to form a fine network; as we get deeper into the skin the network increases in size, the bundles of fibres are much larger, and it is evident that they are running in two directions, for some may be seen in section represented as spaces, whilst others may readily be traced up and down, or from side to side. Where the skin is thickest this network of fibrous tissue, amongst which can be detected connective-tissue corpuscles, is sure to be the best developed.

The upper surface of the corium is irregular in outline, forming the papillæ of the skin; the size of these papillæ will vary with the part examined. On the lips they are large, and towards the mouth they become very long indeed, increasing in length until the mucous membrane is reached, where they are succeeded by the very long papillæ which grow from this part (see fig. 1). It

is only at the margin of the lips where this extreme papillated condition is observed, for although the whole skin of the lips has a well-developed papillated surface, yet nowhere is it so well observed as here; the papillæ are from $\cdot 005$ to $\cdot 014$ of an inch in length, and their width at the base is from $\cdot 001$ to $\cdot 007$ of an inch; inside the mouth the papillæ are much longer, and measurement gives them at $\cdot 04$ inch, and a breadth of $\cdot 005$ to $\cdot 007$ inch. The papillæ or finger-like processes are highly endowed with nerve supply, and they correspond with the long finger-like papillæ I have found on the touch extremity of the elephant's trunk. The whole of this papillated surface is covered by a thick and beautifully arranged epithelial layer to be described later on (fig. 4).

Passing somewhat deeper into the corium of the lips we are much struck by the very large amount of voluntary muscular tissue entering into its formation; muscular fibres can be traced running up between the hairs for a considerable distance; below and around the hair-bulbs they are exceedingly numerous, and in parts where the section has been made transversely to the course of the fibres, large planes of voluntary muscle are to be seen, presenting in stained sections the most beautiful appearance.

In reality the part beneath the skin of the lips is wholly muscular, broken here and there by hair-bulbs, connective tissue, and glands. In the skin of the wing of the nostril we also observe a large amount of muscular tissue entering into the formation of the corium, with fibres running up between the hairs. The papillary layer of the corium of the nostril is very regular; there are no long papillæ such as are found on the lips.

The corium of the general surface of the body is made up of the usual fibrous fasciculi. There are no fibres of the voluntary order of muscle, and the papillary layer is small and fairly regular; sometimes the papillæ are single, at others compound. The corium of the skin under the tail is delicate, the papillary layer barely exists; there are but few elevations or depressions on the surface; the usual fibrous reticulum of the corium exists and is well marked. In the mane we have a well-developed corium, and the papillæ here are large, and the majority, instead of being pointed, are square-topped, almost flat on their surface. In the skin of the leg the papillæ are well marked.

The papillæ of the skin are vascular and nervous, but there is no regularity in their arrangement; we do not find the nervous and vascular papillæ alternately placed, as I am informed occurs in some skins.

Epidermis.—The surface of the corium is covered by the epidermis, which can be divided into the usual two layers. The Malpighian rete is well marked throughout, though it requires some manipulation to bring it into view; the cells are columnar and nucleated; they contain a quantity of pigment which in some parts is so considerable as to completely obscure the cells. This is very noticeable in the skin of the lips and surface of the tail; in the mane we find that this pigmented condition of the Malpighian layer is very much reduced in amount, and is sometimes absent.

The usual arrangement of epithelium occurs, becoming in the stratum mucosum progressively flatter as we reach the surface of the skin. In some parts this is beautifully marked, as on the lips, particularly the inside, where every slight change in shape can be followed with wonderful regularity, from the deep cubical cell to the superficial flat cell (fig. 2). Nuclei can be distinctly seen in the epithelial cells, particularly well marked in that layer just described. Usually we find a certain amount of brown pigment in the cells just above the rete Malpighii, but sometimes the whole thickness of the epidermis is thus coloured, notably in the wing of the nostril and the skin under the tail. In one or two parts of the body the nuclei of the epidermal cells are very large and well developed, so much so that in looking at a

section which is not very thin we cannot see the margin of the ordinary epidermal cells, but we see innumerable nuclei extending for some distance towards the surface of the skin, filling the spaces where the hairs emerge from, and looking more like small round or oval cartilage cells; nothing more in many cases can be seen but clusters of these bodies. This appearance is especially well marked in the skin of the mane and tail.

The direction taken by the epidermal cells corresponds to the elevations of the papillæ; on the lips the elevations and depressions are extreme, and give the layer a wavy appearance; we observe that bands of pigment are common, running from the deep towards the upper layer of the skin; these bands correspond to the depressions between the papillæ of the corium (fig. 1); in other places, such as the tail and mane, the epithelium is fairly straight, whilst on the general surface of the body it is wavy.

The thickness of the epidermis on the muzzle is from $\cdot 03$ to $\cdot 045$ of an inch, inside the mouth $\cdot 05$ inch, on the wing of the nostril $\cdot 022$ inch, on the general surface of the body $\cdot 003$ to $\cdot 005$ inch, and on the mane $\cdot 014$ of an inch.

Blood-vessels.—By means of transparent injections we have been able to study very satisfactorily the blood-vessels of the corium. The arteries run up towards the surface, giving off large branches in their course to the structures they pass near, such as hair-bulbs, sweat and sudoriferous glands; large vessels completely encircle the hair-sac, and can be seen surrounding and passing into the sebaceous glands; the main trunks continue their upward course, and are distributed to the papillæ, in the larger of which as many as three or four trunks enter and penetrate up to the Malpighian layer (see fig. 3).

Nerves.—The nervous supply, particularly to those tactile organs the lips, has received especial attention. Lying in the deep portions of the skin we have large branches of nucleated nerves, seen either running in bundles, or, if viewed in section, as circular groups of bodies consisting of nucleated cells enclosed within a firm sheath. Three or four of these groups may often be seen side by side, but they may also be seen singly; running up through the skin they give off large branches to the hair-sacs, and in the external follicular sheath of those large hairs on the muzzle, termed feelers, the nerves form a large plexus. Excepting the tactile papillæ, there is no part of the skin so highly endowed with nerve force as this sheath. The large trunks of nerve passing to the lips often take a wavy course, and break up directly in the papillæ; others may be traced passing into the papillæ and running to their extreme point, forming loops close to the epithelium, there being as many as two and three nerves to each papilla (fig. 1). It is, however, in the papillæ on the inside of the mouth that we observe the most beautiful distribution. Here the nerves run up apparently through the layers of epithelium to the free surface of the membrane, and terminate in loops. The papillæ appear to be entirely nervous; they are, as we described before, very long and delicate, and the nerves appear to fill them. There is no more beautiful object than the nervous papillæ on the inside of the horse's mouth (see fig. 2).

So far as I can determine, there are no definite nerve-endings. I have seen no corpuscles of Meissner, and of the many sections of skin examined I have only once seen a body resembling a Pacinian corpuscle. It was an exceedingly small object found in the upper lip, and corresponding in every particular with a Pacinian body; but I have only seen it once, so that it is certainly not the rule for the nerves to terminate in these endings.

Sebaceous glands are found everywhere in the skin; in that of the lips they are so numerous and lie so close together that they give the section quite a dark appearance. There would appear to be two glands to each hair. On the inside of the lips there are no sebaceous glands, though they are to be found on the margins, and here are of extreme length. In the skin of the

body, thighs, tail, and mane these sebaceous glands may be found two to each hair; in the mane they reach a considerable size, much larger than elsewhere; the increase in size is principally in length. In the wing of the nostril the glands are from $\cdot 012$ to $\cdot 02$ of an inch in length, and from $\cdot 005$ to $\cdot 006$ inch in breadth; on the body they are $\cdot 005$ inch in length and $\cdot 002$ inch in width; in the lip, $\cdot 01$ inch in length and $\cdot 004$ in width; and in the mane, $\cdot 04$ inch in length and $\cdot 01$ inch in breadth. There can be no doubt that I have seen branches of nerve supplying the sebaceous glands of the horse.

Sudoriferous glands are usually present in large quantities everywhere; in the lips, mane, and limbs, they are, however, but few in number. These glands stain easily with gold chloride; they are readily seen in the skin of the neck, where they are numerous and often completely surround a hair-sac. On the general surface of the body the glands are enormously developed, there being a continuous row of them under the hair-bulbs. The ducts of the glands can be readily seen coiling their way towards the surface of the skin. These glands are not numerous in the mane, and in the tail, though plentiful, they are very deep from the surface. In examining the skin of the limbs I had very great difficulty in finding sweat glands; they are few in number, and at one time I thought that none existed. The sweat glands on the general surface of the body lie at a depth of $\cdot 055$ inch from the rete Malpighii; in width and length they are $\cdot 017$ inch; the diameter of the tube is $\cdot 002$ inch. In the nostril the glands are $\cdot 022$ inch in length and $\cdot 012$ inch in width, the diameter of the tubes being $\cdot 003$ inch. Of the many sections made I have never seen the tube of the sweat gland terminating on the surface of the skin, so that I cannot say whether it is spiral, as in man, or not.

Lymphatic Vessels.—Great difficulty has been experienced in demonstrating the lymphatic vessels of the skin. All I can determine is that we have lymphatic spaces in the upper half of the corium, and that as we get deeper into its structure lymphatic vessels are large and numerous.

Hairs.—Especial attention has been paid to the arrangement of the hairs in the skin of the horse, for I have been anxious to try and determine how those changes which the coat undergoes twice a year are brought about.

The hairs found on the body are best divided into three classes—(a) the tactile hairs (feelers) found on the lips and muzzle; (b) the temporary hairs on the general surface of the body; (c) the permanent hairs of the mane and tail.

Tactile Hairs.—These hairs are very long, and project out some distance from the muzzle; they run for a considerable depth into the skin, and are enclosed in a globular white or yellow sac quite visible to the naked eye. The hairs are not hollow, nor can any trace of canals be seen; in this respect they differ much from the corresponding hairs which I have found on the trunk of the elephant, and which, I may here add, are also enclosed in large globular sacs. If we make a transverse section of a "feeler," we find that a large round or oval space exists in the subcutaneous tissue for its accommodation (figs. 5 and 6). The external sheath of the hair follicle is made up of fibres taking a circular direction, containing connective-tissue corpuscles. The sheath is $\cdot 002$ of an inch thick; within this there is a space, often very large, as much as $\cdot 06$ inch, traversed by prolongations which run from the internal to the external sheath of the hair follicle (figs. 5 and 6). When I first found this space I considered that it was due to portions of the internal sheath dropping out on making the section, but the examination of a very large number of specimens has convinced me that the condition is perfectly natural, and that the internal sheath is never in apposition with the external sheath of the follicle excepting by means of the processes described. In number the processes or prolongations are from ten to twenty, and extremely

delicate; their length is from $\cdot 006$ to $\cdot 01$ of an inch. They are made up of connective-tissue and filled with corpuscles. The internal sheath of the follicle surrounds the vitreous layer; this sheath is also composed of connective-tissue elements, and in width would be about $\cdot 007$ to $\cdot 01$ of an inch. Between the external and internal sheaths, I have seen portions of sebaceous gland.

Next comes the vitreous layer of the follicle, which is extremely narrow, and better seen in transverse than longitudinal sections; within this is the external root-sheath, made up of epithelial cells derived from the rete mucosum; those cells nearest to the vitreous layer are columnar; the others are polyhedral; all have a nucleus; the width of this layer is $\cdot 005$ of an inch. The internal root-sheath comes next. I am not satisfied that it consists of the two layers described in man, and for accuracy it would be best to describe it as one layer. It appears to be formed of scales, though in some preparations it appeared vitreous; within this layer is found the hair. All these points are shown in figs. 5 and 6.

If we examine a longitudinal section of these "feelers," we observe that the external sheath of the follicle is derived from the corium; the internal sheath commences at the neck of the follicle, passes under the papilla, which either rests on it, or is formed from it, and extends up the opposite side; it is much thicker around the hair-bulb than elsewhere. The external root-sheath is readily seen to be derived from the epidermis; it does not extend down to the hair-bulb. In this section the space between the external and internal sheaths of the follicle is plainly seen, also the prolongations which maintain the hair in position (fig. 5). The sebaceous glands are found at the neck of the follicle, usually above the sac. Such is the appearance of this singular object. Staining with picro-carmin gives admirable results, and we can then see the parts perfectly differentiated. The hair is shown as a yellow body with a dark centre, the internal root-sheath is deep red, the external root-sheath orange, the internal sheath of the follicle delicate pink, with scarlet connective-tissue corpuscles, the external sheath paler, with scarlet corpuscles; the whole presents a most beautiful object. The external sheath of the follicle is highly endowed with nerve supply; gold preparations show a most extensive plexus on the inside of the sheath. The hairs found in these sacs lie at a depth of $\cdot 125$ of an inch from the outer surface of the epithelium, and are $\cdot 008$ inch in width. In appearance they present no medulla, and are black or brown in colour. I cannot find that these tactile hairs are in contact with any special nerve-endings, but the extensive nervous supply of the outer sheath of the follicle is quite sufficient to account for their sensibility.

Temporary Hairs.—The sheath in which these lie is different from that of the tactile hairs. Here we have a narrow external follicular sheath on which the hair papilla rests: *there is no internal sheath*, but next comes the external root-sheath of epithelial cells, the external being columnar, the others polyhedral, and all nucleated; lastly, the internal root-sheath, which again appears as a single membrane (fig. 7). The hairs which fit into these follicles have a cortex and medulla; the cortex is vitreous in appearance, but the medulla consists of irregular spaces filled with pigment. Whilst the latter remains in them the part looks quite black, but when the pigment falls out the spaces are clearly seen (fig. 8). At their extremity the hairs terminate in a point, whilst in the skin they gradually increase in size as we get deeper, until they expand to form the bulb, which is hollow below to accommodate the papillæ. In the hair-bulb there is a quantity of pigment consisting of round black and brown cells; as we pass up the hair the cells decrease in number, until the appearance described above takes its place. The outside of the hair is covered by oblong epithelial scales, which form the internal

root-sheath. The colour of the medulla of the shaft depends upon the colour of the horse; in grey horses the medulla is black.

The papilla from which the hair grows fills up the hollow on the bulb, and consists of small round cells enclosed in a membrane which either grows from or rests upon the external sheath of the follicle. I am inclined to the former view.

The hairs on the general surface of the body are shed at regular intervals. If we examine the skin at this time of the year we find the majority of hairs, instead of presenting at their deepest part the usual well-known hair-bulb shape, are conical, and the extremity of the cone appears ragged; the hair has lost to a great extent its pigment, though a few large pigment cells can still be seen on the ragged bulb; the portion of hair in the skin is yellow, and it has lost its medulla. By these characteristics a hair in the process of being shed can be instantly recognised (fig. 7).

The first change which occurs in a shedding hair is that the shaft contracts just above the bulb, and as no more hair is at this time being formed from the papilla, the shaft gradually becomes separated just above the bulb, and the extremity of the hair becomes ragged. The papilla and bulb are now represented by a quantity of cells filled with pigment; the old hair becomes gradually forced up, taking with it the internal and external root-sheath; the cells of the latter spreading under the ragged bulb completely enclose it. In this way it is forced upwards, the distance between it and the papilla gradually becoming greater. Having got perfectly free from the old hair the papilla now commences secreting again, and we soon see a streak of cells extending above it. These rapidly assume the form of a hair, and we now notice that these hairs are coloured, presenting a great contrast to the colourless shedding hair which is still forcing its way outwards; the new hair rapidly grows upwards, and, pushing its way to one side of the external root-sheath of the old hair, causes the latter to become displaced, and the follicular sheath to bulge accordingly (figs. 7 and 9). Soon the apex of the new hair reaches the side of the old one, separated from it only by the remains of the old external root-sheath, and in a short time it touches the old hair, and the two are then seen lying side by side in the follicle, and the new hair, growing more rapidly than the old one is cast off, soon makes its appearance at the external surface of the skin, and we here have the singular appearance presented of *two hairs growing out of the one follicle* (fig. 9); the old hair gradually reaches the surface and is cast off. The new hairs attain a certain length, and then cease growing. After a few months they lose their vitality, and are replaced in just the same way as described above. Such is the singular method by which the horse sheds his coat twice a year.

On the general surface of the body the hairs have a width of $\cdot 0035$ of an inch, the medulla being $\cdot 003$ inch; the internal root-sheath $\cdot 0005$ inch, the external $\cdot 002$ inch, the vitreous layer $\cdot 0003$ inch, and the follicular layer $\cdot 002$ to $\cdot 004$ of an inch.

The *permanent hairs* of the body are those of the mane and tail. These have exactly the same coverings as the temporary hairs, the internal root-sheath being single, and the internal follicular sheath absent (fig. 10). Both in the tail and mane the coloured hairs have a well-marked medulla; where there are white hairs in the mane or tail, the medulla is either absent or only represented by a black streak. In the mane and tail the hairs which die are recognised by exactly the same characters as the temporary hairs; here, however, we never see the new hair growing alongside of the cast-off one. The width of the mane hairs is $\cdot 005$ to $\cdot 006$ of an inch, medulla $\cdot 0045$ inch, internal root-sheath $\cdot 0005$ inch, external root-sheath $\cdot 003$ inch, vitreous layer $\cdot 0005$ inch, and follicular sheath $\cdot 003$ to $\cdot 004$ inch. The hairs of the tail are the widest in the body, being $\cdot 01$ of an inch.

In the hair of the mane there is a well-marked internal root-sheath made up of oblong cells, which fit into each other most beautifully, and stain deeply with carmine; in some sections these cells are left in the follicle when the hair has fallen out; in others they can be seen closely adhering to the hairs. I have seen this appearance in other parts of the skin, but nowhere so marked as in the mane.

I have not attempted to describe the minute anatomy of the hoof, for this has already been carefully worked out by several able observers. I hope in a future paper to describe the histology of the skin of the elephant.

EXPLANATION OF PLATE.

Fig. 1. Section through the lip close to the mucous membrane, showing the shape and length of the papillæ, and the distribution of the nerves *n.n.*

Fig. 2. Section through the mucous membrane of the lip, showing the very long papillæ and nerve supply *n.n.*

Fig. 3. A section through the skin of the leg, showing the distribution of vessels *v.v.* to the glands, hair sheaths, and papillæ; the section through the hair is oblique.

Fig. 4. A section through the skin of the side; the sweat glands are very large.

Fig. 5. Longitudinal section through a "feeler" from the lip, showing the follicle and hair sheaths.

Fig. 6. A transverse section through the skin of the lip, showing the "feeler" in position; the muscular tissue in the surrounding parts is very large; at the bottom of the figure some nerves are cut across.

Fig. 7. A section through the skin of the side; the hair on the right is a new one, and its investing sheaths are the same in all hairs excepting "feelers"; to the left of the figure the old pale hair, with its ragged end, is being forced out, and causes the sheath to bulge.

Fig. 8. A section through a hair from the side, showing cortex and medulla.

Fig. 9. A section through the skin of the side taken from a horse shedding his coat; two hairs may be seen projecting from the one follicle; the bulging of the sheath is very marked.

Fig. 10. A hair from the mane, showing its investing sheaths; only the sheaths on one side of the hair are drawn; *a* is the hair.

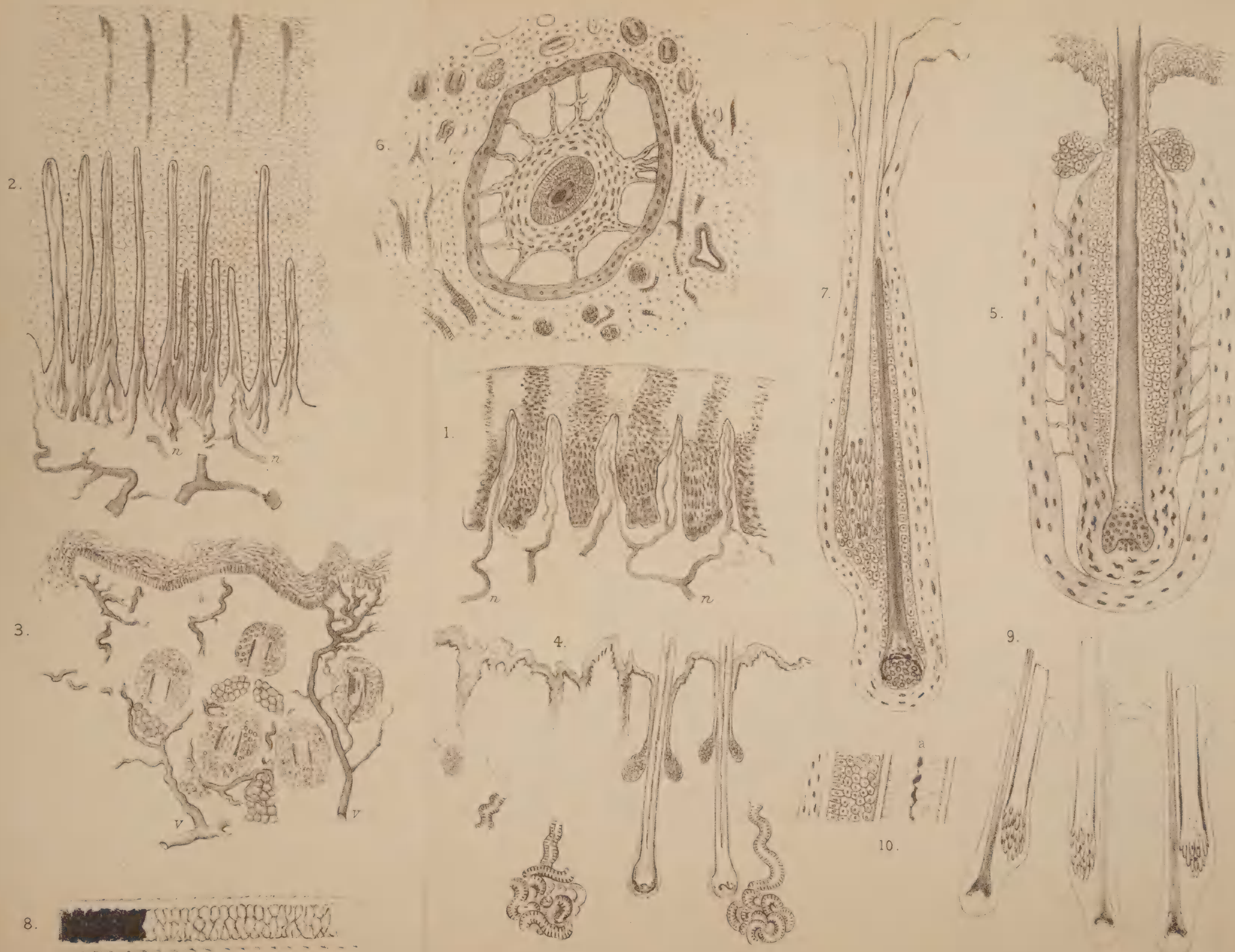
ON ABORTION IN CATTLE.

BY A. ROBINSON, F.R.C.V.S., GREENOCK.

The following paper by Mr. Robinson, F.R.C.V.S., Greenock, was read in the discussion on Abortion, following a paper on that subject, introduced before the West of Scotland Veterinary Society:—

MR. PRESIDENT AND GENTLEMEN,—In proposing at our last meeting that the discussion on Mr. Constable's paper should be deferred until our present meeting, I was actuated by the belief that few subjects apart from those contained in the "Contagious Diseases (Animals) Act" were of greater importance to our agriculturalists; and from the short discussion that did take place I was forcibly struck with the necessity for our arriving at a more unanimous opinion as to one of the causes, if not the most frequent which determines abortion.

Nothing I think reflects greater discredit on our profession than the diametrically opposite opinions expressed in law courts by our members, even in matters which experimental research has placed upon the footing of established fact, and about which there ought consequently to be no divergence of opinion.



From very early times the philosophical, and, later, the medical world, was divided into two groups on a question of great moment, viz., the spontaneous or non-spontaneous generation of the lower forms of life, and it is only within recent years that the question may be said to have been to all intents and purposes settled in favour of the non-spontaneous theory. The advocates of spontaneous generation contended that the life which was observed in substances or liquids undergoing putrefaction originated in these substances spontaneously. Pasteur, however, by a series of ingenious experiments demonstrated to, and convinced the majority of, his most determined opponents, that the organisms observed therein were the germs or spores of germs floating about as dust particles in the air with always a tendency to fall towards the earth. That if these particles were excluded from putrescible liquids, by filtration through cotton wool, or by other means which he devised, those liquids would remain free from putrefactive change for any length of time. But that if the means of exclusion of these particles were removed, the process of putrefaction would shortly commence.

I merely remind you of this fact, because it may be said that, in consequence of its establishment, and the subsequent discoveries relative to contagious diseases, the scientific world is agreed as to the non-spontaneous origin of these diseases.

That form of abortion which most particularly interests us and our agricultural friends is now generally admitted to be contagious, and probably had we been more attentive to the popular belief its contagion might have been earlier demonstrated. Very few farmers who have had any experience of the subject will hesitate, or have hesitated for years to insist on us that it is contagious, and have often maintained that such-and-such a cow brought it into their byre. I believe that in matters of this kind we are often to blame for paying little heed to the opinions of farmers, who, although they may have no notion of the *modus operandi* in such matters, are often very shrewd observers of circumstances from which they make very practical deductions. It may, however, be said that from 1856, when Professor Bouley published his article of fifty-two pages in his veterinary dictionary, until the 15th of September, 1886, when Professor Nocard's report to the Minister of Agriculture appeared in the *Receuil de Médecine Vétérinaire*, little or nothing had been added to our knowledge, either in French literature or our own, on the subject of abortion.*

Professor Bouley, in his exhaustive treatise on abortion, divides it into enzootic and sporadic, and details all the numerous causes (discussing their physiological action) which have been described by Mr. Constable and the various authors and practitioners who have written and spoken on the subject. These causes, however, whether they be referred to conditions of the system, as Plethora, Anæmia, from excessive or defective nourishment, the influence of epizootics, as Pleuro-pneumonia, Rinderpest, Anthrax, etc., food materials altered by frost, cryptogamic fungi, tympany impaction of the bowels, wet lands with grasses impregnated with moisture, sudden and violent muscular exertion, overwork, variation of temperature, wet seasons, miasmatic atmosphere from the decomposition of vegetable and organic substances, immoderate draughts of cold water, when suddenly taken from over-heated stables, therapeutic agents, as purgatives, ergot, digitalis, etc., or fright,

* Surely this is a mistake. In the "Text-book of Veterinary Obstetrics," published by Bailliere, Tindall, and Cox in 1878, it will be seen that our knowledge of abortion had been largely added to since 1856, and that the contagiousness of at least one form of it had been experimentally and clinically demonstrated—that is, more than eight years before M. Nocard attempted to prove that it was a communicable disorder. We refer to page 204 of the work just mentioned. The writer doubtless overlooked this evidence.—ED. V. J.

spaying, or the influence of the male when worn out by too large service, may all be looked upon, in view of the light thrown upon the contagious form of the disease, as accidental causes, while his reference to contagion is somewhat as follows:—

“It is a fact long ago gathered from observation that when a cow aborts in a stable, abortion tends to repeat itself on a certain number of those which cohabit with her, and sometimes even attacks all the inmates of the stable.

“This mode of manifestation has caused it to be admitted that abortion could be transmitted in certain circumstances, after the manner of contagious diseases.

“What is there of truth in that opinion? In the rigorous sense of the word, the idea of contagion carries with it that of a principle, of a morbid germ, created or developed in the organism of a diseased animal, and which, when deposited in that of a healthy one of the same or a different species, develops and multiplies there, giving rise to disease in every way identical, in respect of its nature, its lesions, and its symptoms, and, like it, capable of transmission by the same means.

“A contagious disease is thus characterized by this fact—the existence of a particular principle not yet physically recognised, but recognisable by certain effects which it produces almost invariably every time it is put in contact with an organism suitable for its multiplication.

“Considered from this point of view, should abortion be ranged in the category of contagious diseases? In other terms, does there exist in the system of the cow which aborts a special principle which, when inoculated to a pregnant cow, would determine in her a general trouble, of which abortion would be the fatal expression, according to the same law which causes Glanders and Sheep-pox to manifest themselves after the inoculation of the special virus which belongs to one and other of these diseases?

“Put thus, it appears to us that the question ought to be answered in the negative; we do not believe, because no experimental fact has proved it, that there exists a virus in abortion like the virus of Glanders, of Sheep-pox, of Pleuro-pneumonia, of Anthrax, of Rinderpest, etc.

“But if this virus does not exist, and if consequently abortion is not contagious in the true sense which ought to be attached to the word, is the disposition to abort not transmissible by the intervention of a principle of another nature, which disengages itself from the body of the female in which this accident is produced, and which exercises a toxic influence on the system of pregnant females, of which the possible and common enough effect observed is the death of the foetus and its expulsion before term? In other words, may the aborted females not give rise to putrid miasmata, resulting from the decomposition either of the foetus or its envelopes, infecting the air of the stables which these animals inhabit, and exercising a deleterious effect on the organism of the other beasts in a state of gestation?”

M. Bouley goes on to reason this out, in calling to aid the testimony of various observers, and further proceeds to say:

“On the other hand, the fear of contagion is so firmly anchored in a certain number of minds, that often when a cow aborts, the precaution is immediately taken of isolating all the others with which she has been stabled, but that, nevertheless, the abortion continues to manifest itself on the cows which have not been removed in time to resist the infectious influence of the after-birth of the first.

“It cannot, then, be contested that there is an unknown cause to which it is our duty to direct the attention of observers.

“Here besides is the manner in which one of my correspondents, M. Darreau, a clever and impartial observer, expresses himself:—

“‘It remains for me to speak to you of a singular abortion among cows,

which all the world knows, but as to the cause of which opinions are divided. This is how it behaves; several cows in a stable, and sometimes even the whole of them, abort at different periods of gestation, but more frequently after the fifth month; this accident may continue during several years, even five or six, but I have never seen it exceed this term. The causes, generally attributed to the insalubrity of the stable I at first believed in, and when then consulted, with the object of remedying matters, I immediately hastened to employ the means recommended in like cases, but to my great disappointment always without success. I have often since had occasion to recognise that I had not by these means been able to attack the real cause, for I have seen abortion make great ravages in stables perfectly kept, and in which the animals received copious rations. What is, then, that cause so occult? I am forced to believe that it is contagion, and certain facts tend to prove it to me. A splendid dairy, which leaves nothing to be desired in any respect, was a first year without known cause invaded by abortion. The following year, the proprietor foreseeing what was likely to happen, isolated a beautiful heifer six months gone, for whose produce he was greatly concerned, and placed her in another stable about sixty yards distant from the first. A new cow which he had bought was placed, on her arrival some days later, alongside of her; at eight months the heifer aborted, and fifteen days later the new cow. In the first stable, three cows out of five aborted, and two completed their term.'

"This fact does not solve the question of contagion, in the sense which we believe ought to be attached to this word, but it has a great practical value, because it demonstrates experimentally the dangers which accrue to pregnant females in the vicinity of those which abort.

"It is particularly when difficult questions of this nature arise, that one takes to regretting that our schools are completely destitute of the means of experimentation, which would permit doubtful matters of this kind to be cleared up, and to formulate, with a perfect knowledge of cause, the prophylactic rules from which the agriculturalist would so materially profit.

"That if, for example, they had at their disposal experimental dairies, they would be able to appreciate the influence on cows in gestation of any animal matters undergoing decomposition; if the effect of the infection by these matters differs in any respect from that which results from the decomposition of the cleansing inside or outside of the womb; and in the affirmative case, if the miasmata disengaged either by the dead fœtus or its envelopes had not special or even specific properties, in virtue of which, once introduced into the circulatory torrent, they would exercise their action more particularly and by a quite special affinity on the uterine apparatus of pregnant females; and also all other questions relating to this important matter. The question is asked, Is abortion contagious? and no experiment has yet been made, which furnishes in the smallest degree the solution of this problem, easy of solution notwithstanding if one possessed the means.

"What is the positive part of the aliments swallowed, moulded, covered with cryptogams? What is that of plants covered with dew or with hoarfrost, that of the diet too scanty, or that which is too abundant, etc., etc.? Practice furnishes plenty of important documents on these subjects, but how much more positive and more rapid would be the advance of science, if, under a rigorous experimental method, these inductions from practical observation could have been confirmed and the relative value measured, so to speak, of each of these causes."

Such, gentlemen, was the state of our knowledge over thirty years ago, and such it continued pretty much until about two years ago, when the report which I have already alluded to threw a new light on the contagious form of the disease, and although much remains to be done, much that was suggested as wanting by that article has been most satisfactorily demonstrated.

In December, 1885, the French Government deputed M. Nocard to study the epizootic outbreak of abortion in the beautiful Nièvre breed (race Nivernaise), and to inquire into the causes of that disease and the means to avoid its ravages.

As already stated on the 15th of September, 1886, there appeared in the *Receuil* a copy of Professor Nocard's report to the Minister of Agriculture, and from it, it seems that the Government had previously held an inquiry, to which the majority of the veterinary inspectors of the department had contributed. From this inquiry, the papers connected with which had been handed to M. Nocard, it would appear that while only the minority of the veterinarians invoked contagion, the others not positively denying it, the causes ascribed might be classed under three groups.

1st. Precocity, tendency to fatten, selectness of breed (*l'aristocratie de la race*), qualities only to be attained at the expense of domestication and the aptitude for procreation.

2nd. To crossing, and particularly to crossing with Durham bulls.

3rd. According to a small number of the veterinary surgeons of Nièvre, abortion is due to the ingestion of graminaceous forage, on the ear of which is developed a fungus similar to that produced by the ergot of rye.

In answer to the first, Prof. Nocard arrives at the conclusion that, while fatness may be a modification favourable for the evolution of the evil, it is not of itself sufficient to cause it.

From his investigation of the second group, it would appear that in numerous establishments where crossing with the Durham bull was the rule no abortions had taken place, and that, further, in certain districts, where the disease appeared to have followed the use of the Durham, he had previously served in establishments where abortion existed; the proprietor of one of the establishments, on being questioned, recollected that he had obtained some cows from a doubtful source, and that it was one of them which first aborted.

With regard to the third, he says it merits a closer study, more particularly as an epizootic outbreak of ergotism recently occurred in America, of which abortion and dry gangrene, similar to that produced by ergot of rye, was a feature.

Several reasons, however, militate against this hypothesis.

(a) Abortion takes place where the animals are housed long before autumn, where the herb is cut before the maturing of the ear; that is to say, before the ergot has time to form, when, of course, it can have no influence on the development of the disease.

(b) By contrast, other farms can be cited, where the animals are allowed to remain at pasture until winter, consuming the herb in all its conditions, which is never cut, and without abortion being there observed.

(c) It is the uterine action of ergot of rye that caused it to be thought by analogy that the ergot of graminaceous forage might provoke the contraction of the gravid uterus and the expulsion of the fœtus.

However, it has never been experimentally demonstrated that these ergotized grasses possess an identical action to that of ergot of rye; and, further, that if the ergot of rye provokes the energetic contraction of the uterine muscle after the expulsion of the fœtus, nothing proves that it has an analogous action on the gravid uterus. For his own part, Prof. Nocard has never succeeded in causing a pregnant female to abort, by no matter what dose or mode of administration of the ergot of rye.

Before recording his actual work in connection with this investigation, Prof. Nocard enters into a consideration of the symptoms and course of the disease, in which he profits by the writings of others, and notably of M. Saint-Cyr and numerous correspondents from the districts where the disease mostly prevails. A review of this portion of the report may prove of interest to you.

As a general rule, abortion appears after the introduction of a pregnant animal newly purchased. If this cow aborts, one of the old stock, which had all until now gone their full term, aborts next, and then a second, a third, a fourth, and so on. This stable is henceforth infected, and the disease will reproduce itself with aggravating constancy during several consecutive years. A number of stables can be cited where for eight, ten, and fifteen years abortion affected a quarter, a third, and a half of the pregnant cows.

It is usually the cow next to the newly bought-in one which is the second to abort. It does, however, sometimes happen that a cow which is not in direct contact is the second; the disease notwithstanding frequently, and sometimes exclusively, attacks the animals situated on the side of the stable on which the first aborted.

If pregnant healthy animals from a district in which the disease does not exist are brought into an infected stable, it may happen that these cows, provided they be near their time, calve at the normal period; the others for the most part abort. Nevertheless it may be deduced that the disease must have a pretty long period of incubation. M. Pomneau, a farmer near Saincaize, took on lease a steading previously devastated by abortion, into which he took thirty-two cows, from six to eight months gone; none of these cows aborted. He had thirty-two calves, which he was able to rear, but the second year, eleven out of thirty pregnant cows aborted from the fourth to the eighth month of gestation. It is ten years since then, and the disease continues its ravages in the same proportion. Numbers of similar cases might be cited, but he only mentions two others as being particularly demonstrative. Near Provins (in Brie, where, however, the disease does not prevail in the epizootic form), a brave woman reared her family out of the produce of four milk cows. For many years all the cows which she had attempted to serve aborted. She took the judicious course of fattening the cow of which the udder failed, and bought, to avoid abortion, a cow as near term as possible. One fine day her place took fire, and burnt stable, cows, and all. Fortunately being insured she rebuilt in another corner of the court, bought new cows, and since then has had no abortion.

In a district in which abortion is unknown a proprietor in Chuelles, living for twenty years on the same farm, never had even a case of accidental abortion, when, in July, 1884, he bought a cow seven months pregnant from a farm in Chatillon-sur-Loing, about twenty miles distant, where abortion had prevailed for four or five years. The cow aborted in the same month, and in the month of September her neighbour, five-and-a-half months gone, also aborted. These two cows, sold to the butcher, were replaced by two others, which, after some time, aborted, and then five which he had previously possessed aborted, when from five to seven months gone. Finally, another and last cow, recently purchased, and separated for a month from the others, when placed in the infected stable along with the others aborted, after being there six weeks.

Abortion rarely takes place before the fourth month, but from that on it may happen at any period of gestation.

As a very general rule in an infected stable, the period at which abortion takes place in each succeeding year is later than that of the preceding. In other words, if last year a cow aborted in the fourth month of gestation, the chances are that it will happen this year at the fifth month, then next year at the sixth, then at the seventh, then at the eighth, and then the ninth.

Thus in the steading of M. Michel, proprietor at Azy, where abortion prevailed for twelve years, attacking good and bad years from a third to a half of the pregnant cows, the period of pregnancy at which they aborted was later each year than the preceding, until in the season of 1884 and 1885 there was not a single abortion; all the calves arriving at term were born vigorous

and well constituted, but the first and second days after their birth fourteen out of thirty-two were attacked by diarrhœa, and commenced, as abortions do, to bellow, and died in twelve, twenty-four, and thirty-six hours. They melted while you looked at them, said the proprietor. M. Nocard had no doubt but that these calves died from the same cause as abortions, born capable of life at the seventh and eighth month, but at that time he had not the means of verifying that induction. This gradual retardation in the period at which successive abortions take place, has nothing fixed or regular about it, but attentive breeders have been able to make that general observation.

The age, the breed, the state of fatness or leanness, seem to have no influence on the development of the disease, and it seems to M. Nocard contrary to what has been generally admitted that heifers are equally if not more exposed to contract the disease than those which have already borne.

The cow about to abort does not even seem indisposed; she conserves her gaiety, eats, drinks, ruminates, and milks as usual. However, an attentive observer is often able to predict that such-and-such a cow is on the point of aborting: the vulva is slightly swollen and oedematous, the ischii more prominent, the animal loosens, and, in a heifer, the teats prepare as if parturition were imminent.

The expulsion of the foetus takes place without difficulty; the mother seems not to notice it, neither ceasing to eat nor ruminate. The abortion is too small to be arrested in the passage, or to require violent efforts for its expulsion. When very early the fatal membranes come with it; later on, the contrary; cleansing is slow, and most frequently requires to be artificially removed; the operation being generally more laborious than after parturition at term; the membranes are very adherent, and the veterinary surgeon requires to enucleate each cotyledon by itself, and often the membranes come away in shreds. The observations published give full details on the condition of the membranes or amniotic fluid, and are silent on the condition of the uterine mucous membrane of aborted cows. This is easily understood, as the cow not being ill from abortion, the occasion for examination of the uterus does not present itself, and as she never dies except as the result of retention of the placenta, it is very difficult to distinguish the lesions of retention and septic fermentation of the placenta from those due or special to abortion; on the other hand, the expulsion of the foetus being very rapid and without any difficulty, there is rarely a chance of being present at a case of abortion, and thus there is nowhere any mention made of the condition of the amniotic fluid. It is simply recorded that the afterbirth is usually much altered, macerated, covered with pus, and that the cow voids, for a long time after cleansing, dirty purulent matter.

One would be inclined to think that the uterine mucous membrane, and also the cotyledons, would present similar lesions, but that induction has not been verified.

When a cow aborts, the owner knows very well that there is little chance of conserving her as a reproducer, for either she comes a bulting and is served several times a month without conceiving, or if she conceives, aborts afresh. Very rarely does a cow after once aborting go her full time, and give birth to a well-formed calf. So the majority of breeders usually prepare such animals for the butcher, which is the most honest and wisest proceeding; some, however, when it is not a first calf, cause a calf to be adopted, and send the animals to market, thus spreading the disease. When it is the question of a prize animal, it is easily understood that the breeder hesitates to prepare it for the butcher, and experience proves that it is wise to keep it from the bull for some months, when there is more chance of the service proving successful. As to the calf, it is usually dead when abortion takes place. Sometimes, however, it happens that the abortions are expelled living, well formed, and

vigorous in appearance; nevertheless, four times out of five, the first, the second, or the third day after birth they commence to bellow in a strange and continuous manner, cease to suck, are attacked by diarrhoea, and die in a few days, sometimes even in a few hours. This particular bellowing seems to be the prognostic sign of a fatal termination. Those which do survive generally remain unthrifty, and at three years old are scarcely the value of an ordinary yearling, so that there is really no interest in conserving them.

Now, gentlemen, as I am afraid I may have already exhausted your patience, I will not follow Prof. Nocard through his numerous observations and experiments, but will simply indicate the problems he set himself to solve, and the means he employed to arrive at their solution.

- (1) Was the disease a general disease of the pregnant cow?
- (2) Was it an affection of the generative organs of the mother?
- (3) Was it a disease of the foetus and its envelopes?

Nothing in the living animal would indicate that it was a general disease; all the functions are normally performed, the temperature does not rise above the tenth of a degree, the urine contains neither sugar nor albumen; the blood, the milk, and the different parenchyma remain normal. The histological examination and the sowing in the different fluid and solid cultivation materials used in microbiology do not reveal the presence of pathogenic microscopic organisms. In none of the *post-mortems* was there a trace of any lesion on the peritoneum.

In determining the question as to its being a disease of the genital organs of the mother, the investigations he considered of most were

- (1) The *post-mortem* of cows just aborted.
- (2) The *post-mortem* of cows about to abort (as many as possible at the first calving).
- (3) The *post-mortem* of cows having aborted the previous year, and not afterwards found capable of conception.

A cow at her first calf which aborted, but did not cleanse, having been killed, on making a *post-mortem* he placed a ligature behind the neck of the womb, and removed it, hermetically closed on its contents. With the precautions recommended by M. Pasteur, and which were scrupulously observed all through his experiments, he removed some blood, some milk, and some urine, and having found all the other organs and viscera normal, he removed the womb in a clean linen towel, and the fluids in sterilised vessels. He burnt the peritoneal surface of the womb to the extent of about twenty centimetres, and having heated his knife in a flame, he made a fine incision through the walls, and when barely open he observed a flake of fibrinous muco-purulent material of a bright yellow colour; with a pair of forceps, also passed through the flame, he caught this flake, and placed it in a sterilized test-tube. Pressure caused others to appear, which he treated in the same manner.

He then made a larger incision, and exposed the cotyledons, all still covered with the foetal placenta firmly adherent.

He had difficulty in separating them, and found the placental villi of a dirty white colour, and as if infiltrated with pus or macerated, all the cotyledons being the same, and at their base and around their pelicles there existed a great quantity of these yellow flakes of fibrinous muco-purulent material, frequently recorded as passing from the vulva after abortion. The cotyledon, after being stripped of its placental covering, was firm, rosy, and filled with large deep follicles; pressure caused to ooze out some drops of purulent matter, softer and more easily disposed between two cover-glasses than those which existed free at the base of the cotyledons. The scraping of the cut surface left by the bistoury gave a milky juice, white and homogeneous, analogous to cancer juice. After cauterisation of the surface of a cotyledon, he collected by inspiration, in finely drawn-out and flame-heated

glass tubes, a quantity of cotyledonary pulp, which he sowed in veal and fowl broth and also in peptonised gelatine tubes.

He sowed also some of the puriform matter, some blood, and some milk. He also excised and deposited portions of cotyledons covered with placenta in absolute alcohol.

Coloured with methyl blue he found the puriform matter to consist of a mass of epithelial cellules and of leucocytes, imprisoned in a mucous and fibrinous network, a number of micrococci, isolated, double, and in short chains, consisting of three, four, and five cocci; here and there, also, a few short, thick bacilli, isolated or associated two by two. In the cotyledonary juice it is these bacilli which are found, almost to the entire exclusion of the micrococci. In the juice scraped from the mucous membrane these organisms existed in about equal quantities. After forty-eight hours the sown tubes exhibited an abundant cultivation.

Those sown with the cotyledonary juice, cultivated in a state of purity, exhibited the short, thick, geminated bacillus above referred to. Those sown with purulent matter showed, on the contrary, a mixed culture of micrococci and bacilli, the micrococci being the more abundant, etc., etc.

The tubes sown with blood and with milk conserved their limpidity.

Similar results were got from the other experiments, but it is important to mention that in the cow which had aborted the previous year and was afterwards sterile, a mixed variety of micro-organisms was found, and that the liquid obtained by scraping the uterine mucous membrane gave a slightly acid reaction, and M. Nocard points out that it is probably due to this condition that the animals remain sterile, as the spermatozoæ cannot maintain their vitality in other than an alkaline medium.

Cows from a district where this abortion did not exist had no micro-organisms between the mucous membranes and the foetal membranes, neither in first calvers nor in those which had already borne.

In his investigations on the calves, he found that neither the blood, bile, pericardial, pleural, nor peritoneal serosity, the pulp of the spleen, the liver, kidneys, nor mesenteric ganglia yielded cultivations, but from the liquid of the stomach and intestine and the cerebral bulbs he was able to obtain cultures of the same micrococcus as he had found in the liquor amnii and grumous muco-purulent matter.

It was, of course, necessary to select abortions that had been born dead, and had consequently never breathed for these investigations, for as soon as extra-uterine life commences micro-organisms are always to be found in the alimentary canal of all animals.

Professor Nocard believes that the peculiar bellow of the calf, like the altered voice of the dog in Rabies, is due to cerebral disturbance, and in the case of the calf to the presence of these micrococci.

He also believes that many cases of death from Diarrhoea in newly-born calves result from this cause, and he has examined the bulbs of animals that have died of the disease and found a microbe in all respects identical, so that he considers it is a question whether it is not one and the same disease, evolving at different epochs in the life of the animal. The existence of micro-organisms in the alimentary canal of the aborted foetus, prior to expulsion, was made clearly evident in a simple experiment by Prof. Nocard. This experiment was indicated from the knowledge that in the healthy foetus that had neither drunk nor respired there existed no organisms in either the respiratory or alimentary tracts.

On the 9th February, 1886, Prof. Nocard received the foetus of a cow which had aborted on the night of the 7th February. This abortion was expelled dead, and had neither respired nor swallowed. He suspended it in the court of the Alfort Shoeing Forge by one of the hind limbs. On the 11th, at one

o'clock afternoon, he caused it to be taken down, with a view to making a *post-mortem* examination. It was in a state of complete putrefaction. A reddish frothy serosity with an insupportable odour flowed from the nostrils and the mouth. The skin was distended and crepitant. He sent it to the knacker.

On the 3rd of May he received from the slaughter-house the gravid uterus of a Normandy cow in good condition. He extracted a six months' foetus, and suspended it in the same place as the abortion had been hung. Until the 8th of May it remained in pretty much the same condition, with no discharge from the nose or mouth. The skin, however, was slightly slimy (soapy) and had a foetid odour. With rigorous precautions he opened the abdomen, and took from the posterior vena cava several "pipettes" of dark fluid blood, destitute alike of odour and of gas bubbles. This blood, sown in fowl and chicken both, pure and peptonised, gave no trace of cultivation, aerobic or anaerobic. Besides, the most minute examination of the digestive or respiratory organs revealed no trace of putrefaction. These comparative experiments, frequently repeated, yielded always the same result, thus proving that pre-existence of micro-organisms in the alimentary and respiratory tracts play the principal part in the putrefaction and destruction of carcases.

It is also another proof of the pre-existence of microbes in the digestive tube of abortions (during intra-uterine sojourn), and consequently of the microbic nature of the disease.

His advice with regard to the prophylactic measures to be adopted merits a trial from all of us who may have occasion to advise with regard to this disease.

Every week the floor of the stable ought to be scraped and washed thoroughly, and then watered with a strong solution of sulphate of copper.

Every week a vigorous injection should be thrown into the vagina of the pregnant cows, with a clyster pipe full of warm liquid, of which the following is the composition :—

Distilled water, 20 litres.	
Glycerine	} àà 100 grammes.
Alcohol à 36°	
Bichloride of Mercury, 10 grammes.	

Dissolve the bichloride of mercury in the alcohol and glycerine, mix with the water and agitate well. This solution should be kept in a wooden barrel or other receptacle and put out of the way of animals and children.

Each morning when the animals are being dressed, they should be carefully washed with the above warm solution around and over the anus, vulva, and inferior surface of the tail.

In the case of a cow which has aborted, she ought to be cleansed by a veterinary surgeon, who should exercise great care, and afterwards irrigate the uterus with a long caoutchouc tube carried to the fundus, and through which should be poured eight or ten pints of the tepid solution above referred to. The foetus, and also the membranes, on removal should be immediately destroyed, either by burning or boiling.

Where these measures have been carried out they seem to have yielded good results, but Prof. Nocard says that it is yet too soon to speak positively, and also that to make his experiments conclusive some experimental inoculations are required, which he promised would be carried out, and the result made known when completed.

And now, gentlemen, thanking you for your patient hearing, I place, without further remark, before those of you who may not have had an opportunity of becoming acquainted with these experiments, the result, so far, of Prof. Nocard's labours, in the hope that it will be productive of an ample discussion.

THE FELLOWSHIP OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

It having been represented to the Secretary of State for War that the Royal College has instituted a higher degree in veterinary medicine than that of membership—viz., that of Fellow—and that the Fellowship is only awarded to members after they have been five years in the practice of their profession, and have successfully undergone a qualifying examination, he has sanctioned the proposal to place the letters F.R.C.V.S. after the names of those veterinary officers who are or may become Fellows, in the Quarterly Army List. This generous concession, while it is an acknowledgment by the Army authorities of the value of the title, places veterinary officers who may possess it on the same footing as medical officers who are Fellows of the Royal College of Surgeons (F.R.C.S.), or Doctors of Medicine (M.D.), and have the corresponding initials placed after their names in the official Army List.

The possession of this distinction will exempt veterinary officers from the examinations prescribed for promotion to a higher grade.

THE ROBERTSON MEMORIAL FUND.

At a meeting held by the students of the Royal Veterinary College on the 18th January, it was resolved that the memorial to the late Professor Robertson should take the form of a marble bust. A committee was then appointed to inquire as to the probable cost of the same.

They have since reported, that having conferred with Mr. Birch, A.R.A., the memorial will cost one hundred and twenty-five guineas. It is therefore hoped that intending subscribers will forward their donations to the treasurer, Professor Axe, in order that the bust may be placed in the museum of the College by the 1st of October next.

W. J. MORAN, M.R.C.V.S., *Hon. Sec.*

NEW REGISTER OF THE ROYAL COLLEGE OF VETERINARY SURGEONS FOR 1888.

WE may remind our readers that the new Register is now ready for issue. As it contains the new regulations for the examination of students, and the bye-laws as passed by the Council in January, it will no doubt be read with more than ordinary interest.

It can be obtained either of the Secretary, Royal College of Veterinary Surgeons, Red Lion Square, London, W.C., or of Messrs. Baillière, Tindall, and Cox, King William Street, Strand, London, W.C. Post free, two shillings.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS.

QUARTERLY MEETING OF COUNCIL, HELD APRIL 3RD, 1888.

SIR HENRY SIMPSON, President, in the chair.

Present.—Professors J. Wortley Axe, G. T. Brown, W. Duguid, W. Pritchard; Dr. George Fleming; Messrs. T. Briggs, J. S. Carter, J. Roalfe Cox, E. C. Dray, Thomas Greaves, W. F. Mulvey, A. H. Santy, J. F. Simpson, W. Woods, F. W. Wragg, and the Secretary.

The SECRETARY read the notice convening the meeting.

On the motion of Mr. DRAY, seconded by Mr. SANTY, the minutes of the previous meeting were read and confirmed.

The SECRETARY stated that he had received letters from General Sir Frederick Fitzwygram; Professors Walley, McCall, and Williams; and Messrs. Peter Taylor, Perrins, and Barford, regretting their inability to attend the meeting.

Correspondence.

The SECRETARY read letters from Professor McCall, Mr. C. Rotherham, and from the Board of Trade.

Presentations.

Mr. SANTY said that, on behalf of the Norfolk and Eastern Counties and the Lincolnshire and Western Counties Veterinary Medical Societies, it was his pleasing duty and privilege to present to the Royal College of Veterinary Surgeons a stained-glass window, which had been placed on the right-hand side of the Council Room. The subject treated was a veterinary surgeon examining a horse, which was made to appear as jaded as possible, to carry out the idea of a sick animal. After the stable-master's explanation about the animal, the veterinary surgeon appears to be cautioning him for the future, telling him never to leave till to-morrow what might be done to-day. There was a Latin inscription under the subject to that effect. In the background a shepherd was seen driving a flock of sheep for the veterinary surgeon to examine. The subject was surrounded by an oval interlaced with the monograms of the counties by which the window was presented.

The PRESIDENT, on behalf of the Council, moved that a hearty vote of thanks be accorded to the donors of the window.

Mr. GREAVES seconded the resolution, which was carried by acclamation.

The SECRETARY stated that the following presentations had been made:—By Mr. G. A. Banham, on behalf of the National Veterinary Association, a copy of the "Proceedings" from the commencement, five volumes; a pamphlet on "A Monograph on 'Surra' or Pernicious Anæmia in the Lower Animals," by Mr. R. W. Burke, of the Army Veterinary Department; and a "Calendar of the Pharmaceutical Society of Great Britain."

Mr. DRAY moved that the presentations be accepted, and that the thanks of the Council be accorded to the donors.

Mr. WRAGG seconded the motion, which was agreed to.

Report of the Committee appointed to arrange the Annual Report.

The draft report of the Committee was discussed and amended by the Council.

Mr. DRAY moved that the Report as amended be adopted.

Mr. CARTER seconded the motion, which was agreed to.

On the motion of Mr. J. F. SIMPSON, seconded by Mr. BRIGGS, Professor Brown was added to the Annual Report Committee.

It was resolved that a printed draft of the report be sent to each member of the Committee.

Report of the Registration Committee.

The PRESIDENT said he did not think there was any necessity for going through the report. He thought it would be best to pass a resolution that the Committee should be empowered to act in such a way as it might think desirable with regard to complaints submitted to it under the Veterinary Surgeons Act.

Mr. DRAY moved that the Registration Committee be empowered to deal with all cases brought before it, and carry out the necessary proceedings.

Mr. MULVEY seconded the resolution, which was agreed to.

Report of the Finance Committee.

The SECRETARY read the report.

Mr. DRAY presented the quarterly statement of accounts.

The PRESIDENT said £1590 had been advanced from the General Fund, and the Finance Committee felt that the time had at last come when they could simply transfer the amount advanced to the Building Fund, and thereby declare the College to be out of debt. It was a most important recommendation, and had not been adopted without grave consideration on the part of the Finance Committee. The other recommendation of the Committee was with regard to the Consols. They all knew that the Government were reducing the rate of interest, and the College had merely been asked to assent to the conversion of the Stock.

Mr. GREAVES said he should be exceedingly pleased to see the College clear of debt, and he saw no other way but to adopt the course which had been suggested by the Committee. It would simply be a transfer of the amount from one pocket to the other, and it was a bounden duty they owed to the profession to see that the College was clear of debt.

Mr. DRAY moved the adoption of the Financial Report.

Professor PRITCHARD seconded the motion, which was agreed to.

The following gentlemen were nominated as scrutineers to act at the election for members of Council in May :—Mr. William Hunting, Mr. Percy Spooner, Mr. Wm. Peacock, Mr. A. Rogerson, Mr. Rootes, Mr. Harrison, Mr. Reid, Mr. W. H. Farrow, Mr. Sidney Slocock, Mr. Rogers, Mr. Raymond, and Mr. Pack.

Annual Dinner.

The PRESIDENT said that the Council had already appointed a Dinner Committee, and he wished to bring a matter before them with regard to the forthcoming annual dinner. The following resolution was at present on the minutes : "That no expenses incurred at the annual dinner be defrayed by the Royal College of Veterinary Surgeons in future without the consent of the Council." He would like to ask the Council whether under the special circumstances of the year they might not indulge in a somewhat grander dinner than they had for the last three or four years. He had taken upon himself to invite the Prince of Wales to dine with them, but he had received a reply that His Royal Highness would be in Glasgow on the 7th of May. He had invited the Duke of Cambridge, but as yet he had received no reply from his Royal Highness. He thought the matter might well be left with the Dinner Committee to carry out such arrangements as they might consider desirable.

Mr. GREAVES said he perfectly agreed with what the President had stated. This being a Jubilee occasion the whole profession would look upon it as an honour if the Duke of Cambridge were to dine with them, and he hoped that the Council would sanction the carrying out of the necessary arrangements.

Mr. DRAY, while expressing a wish that any member of the Royal Family would honour the College by his presence at the dinner, hoped the Council would not launch out into unnecessary extravagances.

Mr. WRAGG said he agreed with Mr. Dray, and was much opposed to any money being taken out of the funds of the College to be spent in the way suggested.

Professor BROWN moved that a sum of £25 be placed at the disposal of the Dinner Committee for the purposes of the annual dinner.

Mr. GREAVES seconded the motion, which was agreed to.

Obituary.

The SECRETARY read the Obituary List.

On the motion of Mr. DRAY, seconded by Professor BROWN, it was resolved that a letter of condolence be sent to the family of the late Mr. T. W. Gowing.

Notice of Motion.

Mr. J. F. SIMPSON gave notice of the following motion: "That to enable the Registrar to issue a corrected list of existing practitioners who are entitled to have their names entered in Register No. 3 under the Veterinary Surgeons Act of 1881, he be instructed to obtain the required information under the power given to him by Section 5 of the Veterinary Surgeons Act of 1881, that the necessary inquiries commence forthwith, and that the Registrar be allowed such additional clerical help to enable him to make the necessary investigation as may appear reasonable to this Council."

The SECRETARY stated that up to date the following nominations of gentlemen had been received for election on the Council at the annual meeting:—G. Fleming, W. Pritchard, G. A. Banham, W. Wilson, W. Williams, T. Greaves, J. F. Simpson, G. W. Carter, G. T. Brown, Benjamin Cartledge, Benjamin Russell, J. McCall.

Mr. GREAVES moved a vote of thanks to the President for his conduct in the chair, and the Council adjourned.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

(Continued from page 301.)

Need I allude to the ignorance and prejudice we have to contend against? Take an example: The other day a young horse was brought to me with some little tumefaction of the gums. I was urged to burn out the offending buccal membrane, being met with the impudent rejoinder that lancing was of no use, as it would come again. I need scarcely tell you that I was proof against the desire that I should repeat the barbarism of the old farrier; but what an example of the inheritance of ignorance into which many have come with respect to the treatment of the lower animals! Would any sane parent have requested a surgeon to treat in a similar manner the teething troubles of his own child?

Then, again, I hold that our nomenclature is lamentably imperfect and misleading. Take, for instance, the terms Rot, Scarlatina, Milk Fever, Pink-eye, Spavin, Braxy, Mad-staggers, Red-water, Grapes, Distemper, Megrims, Louping-ill, etc., etc. How would we translate some of them to a foreign contemporary, or with what diseases would a surgeon revert to mentally in order that he might compare them?

Not only is this technical language vague and misleading as a means of expression, but it has a very retarding effect on the proper differentiation of one disease from another; which separation, and the power possessed by the surgeon to recognise it, goes so far towards rational and successful treatment.

Another obstacle to the advancement of our art is to be found in the few inducements which are held out as rewards of sterling work, original research, or brilliant surgery.

At present we are a profession of general practitioners, almost without specialists and consultants, and the highest title we are possessed of is that of Fellow.

Quite recently I am aware that honour has been done us in honouring some of our distinguished members by knighthood, C.B., LL.D., and, latest of all, by the Companionship of the Order of St. Michael and St. George; but I want to know why we ourselves cannot honour those who merit the same by instituting degrees of our own? Surely we can raise a standard which will carry with it a weight and respect far eclipsing the M.D. degree of various foreign universities which are admitted in the medical profession! In the Fellowship degree to which I have referred, doubtless a definite advance in the right direction has been made; it is a distinct stimulus and an honourable

preferment; but I wish, with your permission, to criticise for one moment the wisdom of making this examination the portal alike to the Council as to the Examining Board. I will do this in no carping spirit, and say at the outset that it was done for the good of the profession and that only.

In the nature of things, I think that our reputation as a body will always be judged by the skill and status of the general practitioner, rather than by that of the veterinary *savant*. This reason alone seems to demand that members should at least be represented by some (be it a fixed number or otherwise) of the great class to which they belong; but apart from this, a Council should be largely composed of the elders of a body corporate—men who by experience and by long continuance in well-doing have gained the confidence of their brethren. These qualifications only come with years, as also does that judicial condition of mind so essential for the office.

Now, as a rule, unless a man take his fellowship soon after the membership, is it not true that he may advance in knowledge, and yet be less capable of expressing the same in an examination? Then, again, there is a natural repugnance with advancing years to submit to examination, and this is intensified should there be younger and less experienced men on the Examining Board.

Not infrequently good men rise up in every profession, who in the earlier years of their career can neither spare the time nor the money necessary to obtain this higher degree; but as time advances they are found possessors of wealth, leisure, and ripe experience, well adapted in every respect for the honorary and not inexpensive position of Councilman.

I wish now to leave this question with you, gentlemen, not as one I would deem wise to re-debate, but as one worthy of mental digestion as affecting our highest interests; at the same time we must guard against doing injustice to those who were stimulated to take the examination as the only means of reaching the Council chamber.

With respect to our examiners, I think we are all agreed that the rank of Fellow should be the lowest on the Board. For my part I do hope that at no distant date we shall have names with the affix thereto of M.B., M.D., and B.Sc., graduates of our own R.C.V.S.

At this point another question presents itself, and one which is much nearer home. I refer to the composition of the Board with respect to scientific savants and medical men being thereon. In other words, are we not capable of conducting our own examinations by ourselves exclusively? The question has been answered in the affirmative, with respect to the higher position of Fellow; are we not therefore logically compelled to admit the fitness of our own examiners for this duty? And in relegating it to them, are we not taking a wise course?

The stimulus to all work is the hope of reward, in some form or other; and monetary remuneration is by no means the highest.

If we insist that the examiners shall all be veterinary surgeons, then we offer so many more posts of distinction and honour as examiners, and a greater incentive to take the Fellowship will be created at the same time.

Can we conduct these examinations with credit and efficiency? Let us look into it a little more closely. At the present time veterinary surgeons examine, and must of necessity examine, in the most vital subjects which qualify us for our sphere in life. If, then, the profession undertakes the essential part of the examination, does it not seem reasonable that the accessory subjects may safely be entrusted to their care also? The greater quantity usually includes the lesser.

The only objection which, to my mind, can be urged against the proposition is that the collateral subjects of physiology, chemistry, and botany are each of them so vast, so absorbing, and so changeful by their progression,

that unless a man devotes himself entirely to their study he quickly becomes *passé*, and behind current speculation, theory, and fact.

We are told that the professor of these subjects will have to teach his pupils down to the level of the Examiner, rather than advance them to the pinnacle of present science.

If we had no Fellowship degree by examination, there would appear to be some force in the contention, though in the medical profession there are examiners of the highest rank and culture without this condition; but we have it, and it was instituted for the very purpose of selecting from our ranks men who were pre-eminently forward in science.

Again, be the professor ever so learned and advanced, he must teach the fundamental truths of his subject, and gradually build in the older and well-proven text before his pupils can ever comprehend or appreciate the theories and divergencies recently arrived at.

I would also ask, is there not a limit to the time the pupil is under tuition? Does he not aim at becoming a surgeon rather than a chemist, physiologist, or botanist, pure and simple?

Can a medical student under these conditions rise to the full height of a specialist in each? Is it expected of him?

I would make no distinction between the medical and veterinary student. Each should have a sufficiency of the collateral sciences, and for myself, I see no just reason why a F.R.C.V.S. should not be entrusted with the examination of a candidate for membership. He certainly would be more alive to the points of contact which exist between the sciences and our own. For example, the variation in physiological phenomena as seen in the different species of animal under our care; the application of chemical truths to the every-day routine of the veterinary surgeon; and of botanical facts, and examples necessitating research into the lines affecting the well-being of our patients, and the botany of agriculture.

Between Agriculture and Veterinary Science the relationship is intimate and of great importance. Our profession as a body is receiving in this direction an increasing amount of recognition and respect, and doubtless as time moves on a much larger field of work and usefulness will open up to us.

I hail with satisfaction the prospect of having in this country a Minister of Agriculture with a seat in the Cabinet, as one unit in our Executive Government.

As sanitary officers, officials attached to municipal bodies, &c., I think that the community would do well to seek more of our aid. The health and well-being of our population is so intimately connected with that of the lower animals and their proper treatment, that the sanitary conditions of milk shops, dairies, shippens, abattoirs, stables, &c., demand such an officer; whilst the contagious disease of animals, the examination of food stuffs for them, and the meat supply of man require not only medical knowledge, but a training in chemistry, and in the use of the microscope such as our members possess; and our profession is amazed that the qualification of a policeman is frequently considered sufficient for such a post.

Now, gentlemen, I turn to a subject replete with interest, and one which opens up wide fields for investigation alike to the veterinarian as to the medical man. I refer to the relationship which exists between the diseases of man and the lower animals; in other words, "pathology" in a strictly comparative sense.

What diseases are communicable from animals to man and *vice versa*, the modifications exhibited, and the varying results?

A closer study of the diseases of other animals than those which come under our especial purview is also needed to elucidate many of the problems in medical science. Good results have followed the researches of Mr. Bland

Sutton at the Zoological Gardens, London, and much more may be expected from similar investigations. With respect to the diseases common to man and animals, I need scarcely remind you of the noble work done by Pasteur in relation to the Anthracoid diseases and Hydrophobia, but much remains to be done. Not infrequently are there outbreaks of disease amongst our own species which, rightly or otherwise, are attributed to disease in animals.

At the present time great interest centres in the outbreak of Scarlet Fever at Hendon, which by some is held to result from disease in dairy cattle in the neighbourhood.

Dr. Fleming's paper on "The Transmissibility of Diphtheria from Animals to Mankind," read before the Epidermological Society in 1881; Dr. Klein's recent paper on a similar subject, read before the same society; and Professor Crookshank's report on the Hendon outbreak, together with the discussion which has taken place thereon, must impress all of us forcibly that the true study of pathology is not in confining it to one species, but in extending it to many. I will now conclude with a rough quotation from a recent number of the *Lancet* to the effect that "there is room for the energies of a Darwinian investigator who will join together the *dissecta membra* of isolated scientific efforts, and will bring to light the fundamental truths which underlie the numerous bye-laws of medical science. To aid in this work, by providing reliable *data*, the general practitioner should therefore be as highly trained, as judicious, and as sound in theory as he is practically skilful; he should be a scientific observer."

Every veterinary surgeon can at least aspire to the attainment of this condition, and in so working upwards the individual must necessarily help on the body corporate. I conclude, gentlemen, in asking that you will give me your best help in forwarding the interests of this society, which, in other words, is that of the profession at large, or that of the individual in particular.

Proposed by Mr. PETER TAYLOR, seconded by Prof. WILLIAMS, that a hearty vote of thanks be accorded to the President for his excellent address. Carried unanimously.

DINNER.

The members and guests afterwards sat down to dinner, after which

The PRESIDENT proposed the health of the Queen, followed by the health of the Prince and Princess of Wales and the rest of the Royal Family. It is needless to say that both were most heartily received and responded to.

Mr. J. D. BARFORD gave the toast of the "Navy, Army, and Auxiliary Forces." He said that he hoped the day was far distant when Englishmen would fail to acknowledge the distinguished services which the Army, Navy, and Auxiliary Forces had rendered to this country. We had cause for great congratulation that our forces were in such an efficient condition.

Mr. PHILLIPS, Army veterinary surgeon, responded. He thanked the company for the hearty reception of the toast. Individually, he had great confidence in the Navy, Army, and reserve forces, and the country had of late had many opportunities of seeing that the British sailor and soldier were still, as of old, ready to render distinguished services for the honour and welfare of our Queen and country. As regarded the Army Veterinary Department, it was in an unfortunate position. The Indian Government had greatly reduced the number of Army veterinary surgeons required in India, and the consequence was that during the past three years the Department had been closed to candidates. This was, of course, a most serious matter for young members of the profession, and he could not help thinking that it was also very serious for the Department itself. It should, he thought, receive new blood annually. Numerically speaking, the Army Veterinary Department numbered about 125 members, and it was, therefore, weak when compared with the rest of the profession. But although it was weak in comparison, he hoped he

might be allowed to say that he thought it was taking its full share of the work for the advancement and progress of their profession. Encouraged and advised by its present leader, he was sure the Army Veterinary Department had the honour of the profession at heart, and were labouring for its advancement. It was now nearly four years since he had the pleasure of being stationed at Manchester, and being present at the annual meeting of the Lancashire Veterinary Medical Association, and he considered himself fortunate in being again in Manchester and have the honour of receiving once more the invitation to their meeting. He felt that by accepting the invitation, and listening to the discussions that had taken place, he was receiving benefits socially and professionally. He therefore thanked the members for the privilege.

Mr. T. BRIGGS gave the "Victoria University, as represented by Owens College and the Medical Profession." He said that, as an educational body in Manchester, this toast was probably the most important of any on the list. He need hardly say that the Victoria University was one of the universities in the United Kingdom. It had been largely endowed by people who, not to their discredit be it said, had had a somewhat limited education, but who had come forward with the necessary money to carry on the work of the institution. He dared say that probably no institution in this country had been so liberally endowed as Owens College, which was now enlarged into the Victoria University. There were connected with the institution teachers of the highest renown. Manchester had lost one of them in the person of Sir Henry Roscoe, who was known as a distinguished man throughout the whole country. He (Mr. Briggs) was glad to say that he was succeeded in office by a worthy man. He had fortunately had the privilege of attending the Manchester Royal Infirmary and the old Owens College, and so he could speak from personal knowledge of the kind of training and teaching that were to be obtained there. He could say that they had the very best men there, and no doubt they were paid liberally for their services. Therefore, as far as medical teaching and appliances were concerned, everything was as it should be, but what had struck him as a somewhat incongruous matter was that the pathological teaching should be so far from the place where theory was taught. He had the greatest pleasure in giving the toast, and coupling with it the names of Professor Young, Mr. A. W. Stocks, and Dr. Woodcock.

Professor YOUNG, in reply, said the remarks made in proposing the toast were highly complimentary to the medical profession and to the Victoria University. Reference had been jokingly made to the extreme liberality with which the teachers were paid in that institution for their services. He was glad to find that such an impression prevailed, and he only wished the impression was founded on fact. He begged to congratulate the Lancashire Veterinary Medical Association upon initiating what he felt could only result in good to the whole of the profession, which, he thought, might very fairly be said to be represented not only by those whose names were attached to this toast, but to all present at this dinner. Standing up there as he did, he could only say that, as a member of the medical profession, in the restricted sense, he thought he might take upon himself the task, with the utmost freedom and frankness, of acknowledging the valuable assistance, in the pursuit of medical knowledge, which they had received, and were constantly receiving, at the hands of those who had devoted themselves to veterinary work. He could not but think that both the veterinarian and medical man were with each other in one thing, namely, in aiming at a common end, and the members of the medical profession, in the restricted sense, were, he was sure, never wanting, and never failed to acknowledge the great benefits that were to be derived from experimental observation and experimental research in the work of pathology, as well as from the observation of those who happened to

be their patients, whether in the higher or lower animal kingdom. In passing, he might say that he thought the practice of inviting members of kindred associations to the annual gatherings of this Society would result in bringing together more closely both branches of the profession than had hitherto prevailed in Manchester. He felt that the Owens College School of Medicine was not an insignificant department of the Victoria University, and on many occasions it had been indebted to the members of the veterinary profession for their very valuable contributions to the anatomical and pathological museums. He could not help thinking that in a centre of such a magnitude, importance, and power as Manchester was educationally, that veterinarians could band themselves together still more closely by the inauguration of a school of medicine or of surgery, and thus enter into friendly rivalry with the institution at Edinburgh of which Professor Williams was so illustrious a representative. If they could in that way add to the power of Manchester as a medical centre—using the term medical in its broadest sense—he thought they would be doing more to further the interests of the Victoria University than by any other means in their power. He threw out the suggestion, and he hoped that before the next annual meeting of the Lancashire Veterinary Medical Association came round, the nucleus of a new school of veterinary medicine or surgery would have been formed.

Mr. A. W. STOCKS said the study of pathology was one of the first importance, and he was quite convinced, from what he knew of his own knowledge, that it would grow to be a great triumph in Manchester.

Dr. WOODCOCK also responded, and made a very humorous speech.

Mr. T. HOPKIN then proposed "The Veterinary Profession." He said he knew something of the subject of his toast; a little more, perhaps, than the visitors, although not more than many gentlemen seated round that board. The veterinary profession had a life history of something like a century, and he believed that from the time of the first teaching till now it had been unaided except by individual effort. He believed that the teaching of the profession had been the result of individuals establishing schools themselves. They, as a profession, he made bold to say, excelled in one thing, viz., in the practical part. Undoubtedly as practitioners the British veterinarian stood first. He did not say this egotistically; he was speaking what he believed to be strictly true. In the treatment of disease, whether medicinally or surgically, he did not think they had any profession to surpass them; but when one came to the domain of scientific research, the English veterinarian certainly did not stand in the first rank. Their French and German brethren were ahead of them in that respect, and it was easily accounted for. It was due, perhaps, in the national temperament to begin with; and secondly to the facilities afforded in the Continental schools for research. Thanks to the Vivisection Act the English veterinary surgeon had been still further hampered, and he had no opportunities, except under great difficulties, of carrying out any original research or experimental research. But they had a work before them, and by uniting with the sister profession he hoped the time would come when Scarlet Fever, Diphtheria, and many allied diseases should be traced to their source, and equally understood; when the general health of the community would be considerably enhanced, and when the fearful scourges from which we suffered would be banished from the land. He supposed their medical visitors were aware that the Foot-and-Mouth Disease (which very often was spread from end to end of the land) was now entirely absent in this country, which was owing to the active measures taken by the Government to stamp it out. They had almost, although not quite, succeeded in stamping out Pleuro-Pneumonia, and the same might be done with regard to Small-Pox. That was one of the problems to be dealt with, and he hoped that the day was not far distant when it would be dealt with successfully by

the joint professions. He thought he could claim for the veterinary profession the honour of being first in the field in the study of micro-organisms in the animal kingdom. He hoped the time would soon come when they would have every facility for becoming masters of diseases which were now such a fearful scourge to us. He had great pleasure in giving the toast, to which was attached the name of his old teacher, Professor Williams.

Professor WILLIAMS said he was very proud to have the opportunity once more of standing before them as a representative of their own profession. Many years had elapsed since he attended a meeting of this association. He was present he thought at the second annual meeting along with other gentlemen, some of whom had passed away, but others were still living. He then had the great pleasure of becoming acquainted with the President at that time, Mr. Peter Taylor. He was Secretary of the Yorkshire Association, and he was succeeded in that post by their old friend, Mr. William Broughton, who died a few years ago. Upon an occasion of this time they should not forget their old friend, and his many good qualities. Mr. Broughton was for many years prostrated by ill-health, but he did his duty to his profession, which he dearly loved. He was of a very retiring disposition, but at the same time he possessed an amount of good sense and enthusiasm which was found in very few people. By his death the profession suffered a great loss. As time went on he (Professor Williams) went to Edinburgh. At this point he would like to say that taking a retrospective view he thought that the profession had made great progress during the past twenty years, which was a matter for congratulation. He could quite endorse what Mr. Hopkin—an old friend and student in days of trouble and sorrow—said as to the English veterinary surgeon being quite equal to any in the world as far as practical knowledge was concerned. Of course this was a commercial country, and their patients were looked upon from a commercial value point of view. It was very true that in France and Germany a surgeon would now and again perform a brilliant and sensational operation, such for example as taking the navicular bone from the foot of a horse which was kept in pain for months. The animal was then turned out with a club foot. That was regarded as a triumph of veterinary surgery, but in this country a horse with a club foot would be useless, apart from the pain inflicted on the animal in carrying out the operation. On this ground the English veterinary surgeon played second fiddle to his Continental brethren, but as practical men and as physicians the former were far ahead of the latter. Of course in this country there were not the same teachers as those abroad, and the veterinarian here was hampered with the Vivisection Act. Here there were no public endowments or encouragement given to the public schools, all of which, with the exception of that in London, had been founded by individual effort. The English veterinary surgeons could boast of their brilliant men as well as the medical profession, men who were quite fit to be associated with those of the highest scientific attainments. Looking on the Continent, one saw at the present time a veterinarian as President of the Lyons University. That gentleman was not only a veterinarian, but a scientific man of world-wide renown. In other countries a man possessing great scientific attainments was not limited to his own profession, but, as in this case, become President of a University which, in the speaker's opinion, stood upon an equality with the University of Edinburgh. Therefore he took it as a great honour that one of the veterinary profession should be at the head of such an institution. Going to France, there was M. Bouley, President of the French Academy of Science. He also was a veterinarian and a scientific man, and France paid the profession a high compliment in electing him to this high position. In Italy they had had a member of the profession holding a high post under Government. As to this country, the newspapers of that day gave

more names of distinguished members in connection with the Nottingham Show. There was Professor Brown, C.B., an honour which was a compliment to the profession, and all were proud of it. Then there was Sir Henry Simpson, who was knighted because he was President of the Royal College of Veterinary Surgeons. Having obtained these honours, he thought the profession was looking up in this country. He was very sorry that their old friend, the late Professor Robertson, had gone over to the majority without having some distinction conferred upon him. If any man in this world deserved to have some honour given to him for what he had done for the profession, that man was Professor Robertson. He (Professor Williams) knew him for a long time. He stood before Professor Robertson a trembling student, and was examined by him; they were associated for many years in Scotland, and after their friend became Principal of the London College. In a word, he believed that he knew Professor Robertson as well as any man living, and he could truthfully say that he was a shining light in the profession. And now a few words about the establishment of a school in Manchester. The company might depend upon it, the matter had not escaped a great deal of thought. As they were aware, some of them at all events, he established his college at Edinburgh under certain difficulties. His first premises were taken on lease for ten years. Time went on, and this period came to an end, and, as he had made some money, he intended to spend it in building a college, either in an English town or in Edinburgh, whichever he thought would be best. He carefully studied the matter for more than eighteen months. He came to Manchester to his old friend Mr. Thomas Taylor, and discussed the *pros* and *cons* with him. Professor Arthur Gamgee, of Owens College, was in their confidence, and on two occasions he (Prof. Williams) saw at Liverpool a number of the professors of the medical school. The subject was profoundly considered. He had his money to spend, and his future to look to, and he finally came to the conclusion that a school would not succeed in a large commercial town. Therefore he commenced to build the new college at Edinburgh. It would be different if the college was endowed by some noble and generous person or persons leaving, say, £50,000 for that purpose, and provided with a free clinic. It would then succeed. He did not belong to Scotland, and had looked with feelings of some anxiety to return to the South, to be near his native land. He should have been most happy to be stationed in Manchester or Liverpool, but after the deepest thought he found that the thing would not do, and so he gave up the idea. He should rejoice at the establishment of another school, for his opinion was that the more schools there were the greater would be the competition; teaching would approach something like perfection, and men would make themselves really capable on that account. He did not think that for some time to come there would be a veterinary school established in Manchester, unless, indeed, another John Owens—who must, by the way, have been a Welshman like oneself—arose to endow one substantially. In conclusion, he had again to say that he was pleased to attend that meeting.

Mr. S. LOCKE proposed the health of the President. He said that Mr. Wolstenholme had acted as secretary to this association for some years, and whilst holding that office had endeavoured to make it second to no veterinary medical association in the United Kingdom. The Lancashire Association occupied a high position, and it was no little honour to have been unanimously elected President, as Mr. Wolstenholme had been, for the ensuing year. He had the greatest possible pleasure in asking the company to drink the health of their friend, who, it was to be hoped, would have a successful year.

The PRESIDENT, in responding to the toast, said, whilst he had always been very anxious that the social and ethical element of their society should not

be neglected, he desired that the members should not lose sight of that advance which as a profession it was their duty to make. Unaided as they were, not as they ought to be, they should not only hold their own, but gain a little. They ought in some way or other to ally themselves with their medical *confrères*. That evening their medical friends present at the dinner had not used the term medical as exclusive to themselves. That was a graceful compliment to pay to the veterinary profession, and he believed they meant what they said. He believed himself, if medical science was to advance, as it should advance as near to a definite science as possible, it could not arrive at that goal without the assistance of the veterinary surgeon, or at least till they themselves became surgeons in the widest sense of the word. The many problems which surrounded medical thought were not to be elucidated by simply looking for symptoms and results in the human subject. They were not to be cleared up by observing the symptoms which were to be found in our own patients. If they were to get at the basis of sound medical knowledge upon which to build a true science, they must do as Charles Darwin had done, namely, extend their pathological purview to the whole animal creation. The result of the researches of Mr. Bland Sutton at the Zoological Gardens had been that certain truths had been arrived at which had greatly elucidated our clinical and pathological knowledge with respect to the diseases of man. Such researches as these, carefully carried out and extended to the lower animals, would make plain much that was now in doubt. He sincerely thanked the company for the hearty way they had responded to the toast.

Mr. W. A. TAYLOR, in giving "The Ladies," alluded to the important part ladies were now taking in science and in medicine, and said he thought the day was distant when they would enter into rivalry with the veterinary surgeon.

Dr. HARRIS, of Owens College, responded. He said women were welcomed in the medical profession, for there were in the province of medicine functions which they might perform with very great benefit to the public. He would draw attention to the great improvement that had taken place in the art of nursing during the past fifty years. Thoroughly trained nurses were a great boon to the community and of immense help to the surgeon.

Mr. MOORE also briefly responded.

Mr. ALEXANDER LAWSON proposed "The Visitors."

Mr. JOHN SMITH, of Manchester, in responding to the toast, said that he thought that municipal bodies and others who had the management of civic affairs in their hands, were not at all sufficiently alive to their responsibilities in the matter of the meat supply of the people. Especially were they remiss in not having a qualified veterinary surgeon to see that flesh for human food was free from disease and free from entozoa, such as trichina, echinococcus, or cysticerci.

Mr. R. T. REDMOND also responded.

WEST OF SCOTLAND VETERINARY MEDICAL ASSOCIATION.

THE quarterly meeting was held in the Veterinary College, Glasgow, on 1st February. The office-bearers for the following year were elected: President, Mr. James Weir, F.R.C.V.S., Glasgow; Vice-presidents, Messrs. Houston, Blue, and Peddie; Secretary and Treasurer, Mr. Henry Tweedley, Glasgow.

Mr. A. ROBINSON, Greenock, opened the discussion on Mr. Constable's essay, read at the previous meeting, the subject being "Abortion," by reading a paper on it, which is printed in this month's Journal.

Subsequent remarks were made by Professor MCCALL, Messrs. POTTIE and GARDNER, the chief interest being centred on the contagious nature of the disease when affecting bovine animals.

Mr. POTTIE, Paisley, also introduced the subject of Treatment of Side-bones, as advocated by Mr. Smith in a recent number of the VETERINARY JOURNAL, relating cases in which such treatment was very effectual.

Mr. RUTHERFORD, Edinburgh, also related a very interesting case, where the same method of treatment was followed by excellent results. This terminated an instructive meeting, a very large number of members being present.

HENRY TWEEDLEY, *Secretary*.

MIDLAND VETERINARY MEDICAL ASSOCIATION.

THE next quarterly meeting of this Association will be held at 2 p.m. on May 8th, at the Swan Hotel, Stafford, when Mr. Carless will read a paper on "Some of the Pernicious Effects of Sewage on Animal Life."

ROYAL SCOTTISH VETERINARY SOCIETY.

THE first quarterly meeting of this Society was held in the Library of the Dick Veterinary College, Edinburgh, on Wednesday, March 21st.

The President, Professor Walley, occupied the chair, and the following members were present:—Messrs. A. Baird and M'Arthur, Edinburgh; Burnett, Maybole; Barclay, Dunfermline; Weir, Glasgow; M'Geoch, Paisley; Fingzies, Lochgelly; Cassells, Lanark; Pow, Jedburgh; H. Hunter and W. Hunter, Newcastle-on-Tyne; R. Reid, Auchtermuchty; Fairbairn, Cupar Fife; Young, Leith; and Professors Baird and M'Fadyean. Dr. A. P. Aitken and Messrs. Scoular, Moore, Mullen, Gold, Clayton, and R. Walley were present as visitors.

Mr. A. BAIRD, *interim* Secretary, intimated that over forty ordinary members had already joined the Society. The following gentlemen were elected Vice-Presidents for the current year:—Professor Baird, Dick Veterinary College; Mr. Burnett, Maybole; and Mr. Reid, sen., Auchtermuchty. Mr. Fairbairn, Cupar Fife, was elected Secretary and Treasurer.

The following gentlemen were elected honorary members of the Society:—Professors Turner, Chiene, Balfour, and Greenfield, Edinburgh University; Professor M'Kendrick, Glasgow University; Drs. Woodhead, Symington, Macfarlane, Aitken, James, Bruce, Cathcart, G. W. Balfour, Littlejohn, and Russell.

The rules for the conduct of the Society were discussed and adopted.

The CHAIRMAN, in intimating his acceptance of the office of President, remarked that he need not say much with reference to the establishment of the new Society. Most of them, he imagined, regretted some of the things that had passed, or that led up to the present movement. So far as he was personally concerned, he only regretted that because it did away to some extent with the unity which should exist in the ranks of a small body like theirs. He was not conscious of having done anything to bring about the dissolution of the Society. He could not, in looking over the past, charge himself with anything that could be considered ungentlemanly or unkind towards the old Association; and the minutes showed that, since joining the Association in 1872, he had held the office of President twice, and had twice been appointed Vice-President, and that he might claim to have done a very fair share of the work of the Society. He hoped he might be spared to remain a member of the new Society as long as he had been a member of the old; and that the same might be said of him that was said only two years ago, that he had done very much to popularise the old Society. In establishing the new Society they must avoid introducing any personal element, and they must make it as entirely a scientific Society as they could. In such a Society all but purely scientific subjects should be eschewed. Political and social subjects might very well be considered outside of the Society.

The PRESIDENT exhibited a series of interesting morbid specimens.

It was, he said, a remarkable fact that during the last six months the particulars of three cases of death by internal hæmorrhage, resulting from Renal Disease, had been brought under his notice.

In the first case, occurring in the practice of Mr. Pender, of Lockerbie, the kidneys were the seat of interstitial inflammation; and in addition there was inflammation and thrombosis of one of the iliac arteries, and the coat of the latter had suddenly given way, it was supposed, from an injury received during an attack of Colic.

The second case occurred in a horse belonging to Messrs. Withers and Co., London. He was taken ill on the morning of Monday, November 21st, with symptoms of internal hæmorrhage, and showed evidence of pain on the left side. He died on the afternoon of the following day. The *post-mortem* was made by Mr. W. Reekie, who found the left kidney enormously enlarged and softened, its capsule ruptured, and an immense quantity of blood in the abdomen. The kidney was forwarded to Professor Walley by Mr. Reekie, and a calculus, which the Professor exhibited, was found embedded in the kidney structure. This had been the cause of acute inflammation and subsequent degeneration of kidney. The interesting point in connection with this case was that the horse had been in the possession of Messrs. Withers and Co. for four years, during which time it had never shown the slightest signs of illness.

The third case came under the observation of Mr. William Barling, of Newnham, whose attention was first directed to it at five o'clock on Monday evening, February 6th. Mr. Barling found the horse in a very bad state, and had him removed to his own place, a distance of a few yards from the stable; the symptoms shown were those of flatulence, with stiffness of the hind legs. The horse died in about an hour and a half, and on *post-mortem* examination a large quantity of blood was found in its abdomen. Examination of the kidneys revealed a beautiful example of Cystic Disease, as a result of Hydro-nephrosis, produced by constriction of the ureters. The right kidney was reduced to a mere cyst, the left much enlarged; but the cystic change had only destroyed the half of its medullary portion.

The Bladder of a Horse, forwarded by Mr. B. Kettle, of Market Drayton. The specimen was a good example of sabulous bladder. It weighed 14 lbs., and its wall was much thickened from chronic inflammation. This was the first of its kind that had come under the observation of Mr. Kettle during a practice extending over forty-eight years. The horse, a well-bred chestnut, had been ill for two years, but had been very much neglected by his owner, and was ultimately killed on account of having fractured his leg.

The Penis of a Bullock, showing the effects of obliteration of the lumen of the urethra by calcareous matter, with subsequent croupous inflammation of the urethral wall, and accumulation of an enormous mass of calcareous deposit. The penis was removed by Mr. Colin Campbell, of Methwold Hythe, by an incision extending from the scrotum forward through the prepuce. In performing the operation, Mr. Campbell, finding that the stump of the penis retracted a considerable distance, and being apprehensive that the urethra might become constricted, made a second incision a little distance below the perineum, through which he drew the stump, securing it in the wound by means of sutures. The urethra was subsequently kept open by inserting a small catheter, which was kept *in situ* by the aid of catgut sutures. The bullock ultimately did well.

A Cystic Calculus, removed from the urethra by Mr. Blair, of Duns. In this case, the horse which was ten or twelve years old, had suffered from repeated attacks of apparent Colic.

Section of Adductor Muscles of the Thigh of a Jersey Cow, showing evidence

of the effects of severe injury received during attempts to rise on recovery from parturient Apoplexy. This case occurred in the practice of Messrs. H. and A. Hunter, of Newcastle-on-Tyne, and it illustrated a lesion of comparatively common occurrence in cows, as a result of injuries received during or after parturition. The animal, on recovery from the brain symptoms, was unable to support herself on her hind legs, which became spread out in a lateral direction. The muscle had a parboiled appearance, was very soft, and in parts a large quantity of new cicatricial tissue existed.

Section of the Body of the Uterus of a Cow, presenting the changes usually seen in cases of chronic Twist of that organ. The lumen of the uterus was nearly obliterated by the formation of an enormous quantity of new interstitial tissue, as a result of mechanical venous congestion; the large veins were obliterated by thrombi. The case occurred in the practice of Mr. R. Levie, of Lerwick, and illustrated a fact which Professor Walley had brought under the notice of the profession as far back as 1872 or 1873—viz., that in old cases of this kind turning of the body for the purpose of reducing the Twist was useless, as, although the organ might by this means be restored to its normal position, it would be impossible to remove the fœtus, on account of the obliteration of the canal.

A Specimen of Intussusception of the Small Bowels of a Cow, sent by Mr. W. D. Fairbairn, of Cupar, on the 27th ult. The cow was eight years old, and during a period of six days had only once defœcated, the ejected matter being of the colour and consistence of coal tar, and composed of altered blood clot. During the existence of the illness the animal evinced very few signs of abdominal pain. Professor Walley remarked that this was the first case of Intussusception that had come under his observation in an adult bovine, and that cattle did not, as a rule, show such marked evidence of pain in intestinal disease as horses.

Section of Lung from Bullock, and also of the Muscles and Connective Tissue around the Trachea at the Base of the Neck, showing, in the case of the lung, the changes of contagious Pleuro-pneumonia of several months' standing, with extension of the specific lesion along the mediastinal tissue. During life the neck was enormously swollen, and Professor Walley remarked that this was the worst case of the kind he had met with, although, doubtless, many of the cases of supposed Dropsy, with which the older members were all familiar in days gone by, were of this nature. The lesion was identical with that resulting from inoculation.

Professor M'FADYEAN said that he had been much interested in one of the specimens exhibited by the Chairman, showing in a case of spontaneous Pleuro-pneumonia specific lesions in the neck. He thought that this might have been excited by a bruise or injury; that it was, in fact, similar in its nature and causation to the swellings which were not uncommonly seen in cattle inoculated in the tail for Pleuro-pneumonia. Professor Walley, however, as a result of his examination, concluded that the neck lesion had formed by direct extension from the affected lung. Still, he thought it was a point worthy of inquiry, whether, even in the subjects of spontaneous Pleuro-pneumonia, such a lesion might not form on any part of the body as the result of a bruise. If such were the case it might be employed as an aid to diagnosis in doubtful cases of Pleuro-pneumonia and Tubercle.

VETERINARY MEDICAL SANITATION.

The CHAIRMAN read a paper on "Veterinary Medical Sanitation," in the course of which he expressed satisfaction that the Privy Council had determined to adopt energetic measures for the extermination of Pleuro-pneumonia, but he confessed to a feeling of disappointment on several points of detail. He maintained that the slaughter of contaminated as well as of diseased animals,

for which he had been advocating for years, had been shown by the experience of other nations to be the only reliable method of dealing with the Plague if it were to be effectually suppressed. Surely in a matter of that kind, which affected the prosperity of every individual in the State, the burden should be borne by all. Why had it been a local burden? Simply because the Privy Council had not the power to make it an Imperial burden. The sooner Parliament gave the Privy Council that power the better. It was plainly an injustice to saddle any community with the cost of suppressing an outbreak of disease, with the inception or introduction of which that community had had nothing to do. Why, he asked, should the taxpayers of Edinburgh be burdened with a great outlay for the purpose of suppressing an outbreak of Pleuro-pneumonia when neither the authorities nor the owners of the animals could be in any way held responsible for the introduction of the malady? Another grave defect in the new order was the manner in which the inspection was to be carried out. He failed to see why the Privy Council had not taken the matter into its own hands as was done in dealing with the Cattle Plague. He felt justified in saying that that defect, coupled with the one before mentioned, would do much towards counteracting the beneficial work of the order. Principal Walley then pointed out that the Danish Government had during the last seventeen years suppressed six or seven outbreaks of the disease not only by prompt slaughter of the diseased animals, but also by the slaughter or isolation of all animals within a tolerably extensive radius of the infected place. Tuberculosis, however, was the disease *par excellence* which at the present day demanded, from a sanitary point of view, the most earnest and full consideration. The terrible increase of this disease amongst bovines was simply appalling, and it was no exaggeration to say that the number of cases which came under observation exceeded by 20 to 30 per cent. those met with about two years ago. Not only stock, but the milk producers and the flesh producers of the country, were found to be subject to the disease, and that, too, in many cases where during life the animals appeared to be in perfect health. The sanitary aspect of the question was an exceedingly grave one in the face of the fact that cows affected with the disease frequently gave a very large yield of milk. It was also a fact that lesions were in many cases localised in the udder of the cow. The infective nature of the milk had been proved by countless experiments carried out in very different species of animals, and there was an amount of individual evidence tending to show that these infective qualities were transmitted to man. Since he had been interested in the question he had always held that milk never became harmful unless the udder was affected. Other observers had held that that was not necessary in order to render the milk infective. The strongest advocate of that view, Professor Bong, of Copenhagen, had written to him (Principal Walley) stating that he had come to the conclusion that the milk of tuberculous cows, in which there were no lesions in the mammary glands, only exceptionally contained contagion. Another question of equal importance is the origin or transmissibility of such diseases as Scarlet Fever and Diphtheria from animals to men. The "Scarlet Fever craze" had been in existence for several years, and some very remarkable hypotheses had been propounded by medical men who had, he thought, based their conclusions upon very insufficient data. Assuming the transmissibility of Scarlet Fever from man to animals, and *vice-versâ*, and assuming the existence of that affection independently in animals, such transmissibility or such independent existence of the disease had never come under observation. He expressed the opinion that none of the eruptive diseases between which and Scarlet Fever a resemblance had been traced, were in any way related to the disease; and, further, the Scarlet Fever of the human being had not been, nor could it be, transmitted to cows.

In the discussion which followed, Mr. WEIR, Glasgow, alluded to the grow-

ing importance of Tuberculosis among dairy stock. In his experience it was very common among cows bought in to replenish city byres, and it was a matter of common observation that the disease in these animals seemed to be in a measure arrested during pregnancy, to proceed, however, with greater rapidity after parturition. Referring to the danger to human beings from the consumption of milk from tuberculous cows, he narrated a case in which there was some reason to believe that an infant had in this manner become infected.

Mr. M'GEOCH, Paisley, said that he had himself proved by experiment in certain cases the infective properties of milk from tuberculous cows. He was of opinion that such milk was not free from danger even in cases where there was no discoverable lesion of the mammary gland.

Professor M'FADYEAN then brought under the notice of the Society the particulars of two cases of Tuberculosis, and one of Actinomycosis in the horse.

The members and friends afterwards dined together in the new Practical Chemistry Class-room. During the course of the proceedings Mr. H. Hunter, Newcastle-on-Tyne, on behalf of over two hundred members of the veterinary profession, presented to Professor Walley a beautifully illuminated and bound address. The address set forth that the signatories desired to convey to Principal Walley an expression of the esteem in which they held him, recognising as they did his devoted attachment to their profession and his unwearied exertions for its advancement. They considered that the completion of the new and handsome college buildings, for which he had worked so assiduously and so successfully, was a fitting time to wish him and the institution over which he presided continued prosperity. Professor Walley suitably acknowledged the presentation, and the proceedings shortly afterwards terminated.

W. D. FAIRBAIRN, *Hon. Sec.*

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this Association was held on the 18th February, at the Great Western Hotel, Birmingham.

Present: Mr. J. M. Parker, President, in the chair; Messrs. Over and Malcolm, Vice-Presidents; Mr. T. Chambers, Secretary; Messrs. Beddard and Pritchard, Wolverhampton; Blakeway, Stanley, Price, and Tailby, Birmingham; Barling, Ross; Carless, Stafford; Collett and Dawes, West Bromwich; Trees, Uppingham; Jones, Leicester; Olver, Tamworth; Reynolds, Daventry; Smith, Tunstall; Trigger, Newcastle-under-Lyme; and Taylor, Stourbridge.

Visitors: Mr. J. Briggs, J.P., F.R.C.V.S., Bury; Mr. J. Hopkins, F.R.C.V.S., Manchester; Mr. W. A. Taylor, F.R.C.V.S., Manchester; Mr. Irving, M.R.C.V.S., Birmingham; Mr. Councillor Lawley Parker, J.P., Birmingham; Mr. H. G. Bambridge, Solihull; Mr. D. L. Carey-Rewis, co. Clare; and Mr. J. H. Joyce, King's Heath.

The minutes of last meeting were read and adopted.

THE HON. SECRETARY read letters of apology from Sir Henry Simpson, Windsor; Professors Walley and Williams, Edinburgh; Messrs. Gooch, Stamford; Golden, Rugeley; Cartwright, Wolverhampton; Merrick, Northampton; and Blakeway, the Treasurer, who was absent through illness.

Election of Officers.

The PRESIDENT proposed Mr. Trigger as President for next year; he felt sure no one would fill the office better. (Applause.)

Mr. OLVER seconded, and Mr. CHAMBERS supported the proposition. Carried unanimously.

The PRESIDENT proposed that Mr. Malcolm be elected Secretary.

This was seconded by Mr. OVER. Carried unanimously.

The PRESIDENT next moved the election of Mr. Blakeway as Treasurer. Mr. Blakeway was a gentleman who had worked hard for the Association, and no one could take better care of their money than he did.

Mr. PRITCHARD seconded this, and it was carried unanimously.

Mr. PRICE moved, and Mr. STANLEY seconded, a resolution that Messrs. Chambers and Tailby be elected Vice-Presidents. Carried unanimously.

Mr. TRIGGER thanked the Association for the honour they had done him. It was an honour quite unexpected; but, since they had deemed him worthy of it, he would endeavour to uphold the dignity of the Association during his term of office. He was glad Mr. Malcolm was to be his Hon. Secretary.

Mr. MALCOLM, in response to his election, thanked the members for electing him Secretary. He knew it meant work, but he had done secretarial work before, and gained many friends thereby; therefore he had pleasure in accepting the position.

Mr. CHAMBERS and Mr. TAILBY returned thanks for their election as Vice-Presidents.

Mr. BLAKEWAY acknowledged the re-election of his father as Treasurer.

The PRESIDENT then handed in the balance-sheet, audited by himself and Mr. Trigger, and found correct, showing a balance in favour of the Society of £117 17s. After payment of a second donation of £50 to the Royal College building fund,

On the motion of the PRESIDENT, the accounts were passed.

The SECRETARY then read a letter from the Secretary of the R.C.V.S., thanking the Midland Society for their donation.

A discussion then took place as to the nomination of a member as a candidate for Council, in which the PRESIDENT, Messrs. OLVER, TRIGGER, PRITCHARD, and others took part.

It was ultimately decided not to nominate a candidate this year, and the hope was expressed that the Society would as usual support the nominees of the Yorkshire and Lancashire Associations.

The Secretary was authorised to co-operate with these Associations with the view of securing the return of the gentlemen selected by them.

Mr. TRIGGER proposed a vote of thanks to the retiring officers for their services during the past year. They had carried on the Association with such success, and discharged the duties with so much satisfaction, that it would be difficult to follow them.

The PRESIDENT and SECRETARY briefly responded, and Mr. BLAKEWAY replied for his father.

The PRESIDENT then called upon Mr. MALCOLM to read his paper on "The Feeding of Draught Horses," which was as follows:—

MR. PRESIDENT AND GENTLEMEN,—When requested to read a paper before this meeting it was with some diffidence that I ventured to comply; for, remembering the many able addresses we have had from learned professors and others holding high position in the profession, it was only after feeling assured of your leniency that I agreed to bring this one before you. Many may probably think that as we have only three or at most four meetings a year, such a commonplace, every-day subject as the feeding of draught horses should not have been chosen; but instead, some topic introduced which would have possibly excited a more animated and interesting discussion than may be possible on a paper on horse feeding. At the same time I do not deem any apology for the subject necessary. It is one of great importance to most of us, both from a utilitarian and economical point of view; and besides this, I am acting under the express wishes of our President. Willing as I have no doubt we all are to obey the behests of our chief, especially when he

does us the honour of requesting a paper for one of our meetings, my acquiescence was all the more readily given in the present case as I hope to acquire new information from the discussion which I trust will follow, and so add to my knowledge of this highly important subject.

It will not be possible to bring before you much that is entirely new or original, as I have to a large extent followed in the footsteps of my able preceptor, Mr. Hunting, of South Hetton, with whose published views on the question many of you are no doubt familiar.

Relation between the Constituents of Animals and Vegetables.

As the food of horses consists wholly of vegetable matters, a brief comparative glance may be taken of the component constituents of animals and vegetables before entering upon the discussion of foods and feeding.

The constituents composing the animal body are divisible into two groups, the inorganic or incombustible, represented by the saline materials or ash; and the organic or combustible, which are again sub-divisible into nitrogenous substances represented by albumenoids and non-nitrogenous bodies, such as fat.

Vegetable substances are also composed of organic and inorganic constituents, the latter being represented by the ash, and the former by albumenoid and fatty matters; but while the essential constituents of animals and vegetables are similar, they differ in their relative proportions. Thus the comparative amount of fatty matters present in vegetables, and principally represented by carbo-hydrates, such as starch, sugar, and gum, is much greater in proportion to nitrogenous matters than is the case with animal bodies. The use of this excess of fatty matters in vegetables will be apparent when it is remembered that besides supplying materials for building up the animal frame and replacing tissue waste, food provides combustible matters for the generation and maintenance of heat, and for the production of mechanical force. In brief, the constituents of food are nitrogenous matters, fats, carbo-hydrates, and ash; and, like the animal body, food usually contains in addition a considerable proportion of water.

Of these constituents the vegetable nitrogenous matters, such as gluten, legumin, etc., are similar in composition to, and usually go to form the animal nitrogenous matters, as albumen, fibrine, casein; they also furnish materials for the gelatinoids. By their combustion heat and force are developed, but if only partial oxidation takes place fat may be produced. Albumenoids, therefore, can supply most of the animal requirements, a statement which cannot be made of any other food constituent. Fatty matters, whether true fats or carbo-hydrates, are the chief sources of heat and force, but when given in excess are stored up in the form of fat in the animal body. The saline materials present in the food provide the necessary ash constituents for bone and other tissue, and while a sufficient supply of the requisite ash is of much importance in the food of pregnant animals and growing stock, it is of much less account in that of mature dray horses. In consequence of the limited amount of ash necessary for fully-developed animals it may practically be eliminated from consideration, the small quantity required to replace waste being amply provided for in most ordinary foods. The water required by horses for nutritive and depurative purposes is obtained partly from the food, but principally from the drinking water.

The Process of Digestion.

These food constituents, before being available for nourishing the animal body, have to undergo a process of digestion. This is commenced in the mouth, where the food is ground up and masticated. Some of its carbo-hydrates, such as sugar, are soluble and diffusible, and require no digestion.

Others, such as starch and cellulose, are insoluble. These latter are here acted upon by the saliva, whose special action is the conversion of insoluble starch into soluble sugar. Any starch unconverted in the mouth passes through the stomach without material change, its further digestion being completed in the small intestines, where the solution of starch and cellulose is effected by the action of the pancreatic and intestinal secretions.

True fats are liquified by the heat of the body, but their digestion is not effected until they reach the small intestines, where they are emulsified and saponified through the agency of the bile and pancreatic and intestinal secretions.

The digestion of albumenoids is mainly effected in the stomach, where they are acted upon by the gastric juice, whose function is to convert the indiffusible proteids or albumenoids into diffusible peptones. Those not converted by the acid gastric juice in the stomach, on reaching the small intestines are subjected to the action of the alkaline pancreatic juice, one of whose functions is the conversion of albumenoids into peptones.

The saline constituents, if not previously in solution, are, on arrival at the stomach, immediately dissolved.

Water requires no digestion, but is the medium by which the solution of the other food materials is effected.

The constituents of the food thus digested undergo absorption in a greater or less degree throughout the whole alimentary canal, but chiefly in the small intestines, from whence the digested materials pass either directly into the blood or enter it through the intermediate lacteals and lymphatics. In the blood they are carried to the various tissues, where they either serve nutritive purposes; or, by their combustion with the inhaled oxygen from the atmosphere, produce heat and force.

The products of combustion and tissue waste are ultimately carried off through one or other of the excretory channels. The function of food is to provide for this tissue waste and combustion. But, however completely digestion of the food takes place, a certain percentage of it either cannot be, or at any rate remains undigested, and is ejected as excrement.

Food Stuffs: Their Composition.

The following table, compiled from an average of many, shows the approximate composition of the various stuffs given as horse provender:—

ARTICLES OF FOOD.	Water.	Albu- menoids.	Fats.	Soluble Carbo- hydrates.	Fibre.	Salts.
Beans	14.5	25.5	1.8	45.8	9.3	3.1
Peas	14.3	22.4	2.0	50.7	7.9	2.5
Oats	13.9	12.3	5.6	53.8	10.8	3.6
Barley	14.0	10.0	2.2	64.2	7.0	2.6
Maize	12.0	10.0	5.3	68.0	3.0	1.7
Bran	13.5	14.0	4.0	49.1	14.2	5.4
Linseed	12.0	21.5	38.0	17.0	7.5	4.0
Clover Hay	16.5	13.0	2.8	35.4	26.5	5.8
Meadow Hay	14.6	10.0	2.4	41.0	26.6	6.4
Clover	83.0	3.0	0.7	7.3	4.5	1.5
Grass	76.5	3.1	0.8	13.0	5.6	2.0

You are no doubt all more or less familiar with similar tables, and the leading characteristics of the various foods; nevertheless, permit me to recall the following important facts:—

1st. That the leguminous seeds contain twice as much albumenoids as the cereals.

2nd. That the special feature of the cereals is the large percentage of easily-digested carbo-hydrates.

3rd. That maize is extremely deficient in ash constituents.

Interesting and highly-instructive as such tables are, they may be very misleading if studied without discrimination. Although practically accurate in the relative estimate they present of the feeding value of kindred substances, they cannot be relied upon in calculating the approximate value of such different substances as oats and hay, for it will be at once apparent to all practical men that hay has not relatively such a high feeding value as here given. Again, bran appears to have as much nutriment as oats, but no one who knows anything about the matter practically would expect the same work from a horse fed on bran as from the same horse fed on oats. But while it is fallacious to compare oats and bran by such tables, we may safely rely upon the accuracy of the approximate values shown to exist between the various grains, or between meadow grass and green clover; or, again, between meadow hay and clover hay. Let us endeavour to account for this apparent anomaly in these tables. It has been the custom to reckon the whole of the nitrogen present in the foods as albumenoid. Now, while this is fairly accurate for the seeds, it is not so with other foods, as a quantity of the nitrogenous matter in bran, for example, has been found to be either indigestible, or, if digestible, non-albumenoid consequently acting simply as a fat-former. Again, when we come to consider the digestibility of foods, it will be seen that only the half of the organic matter in hay is digested, against 80 to 90 per cent. in corn.

Nutritive or Albumenoid Ratio of Foods.

In calculating the nutritive value of foods, a very important factor is the nutritive or albumenoid ratio—in other words, the proportion which exists between its flesh-formers and fat-formers. To calculate this, it is usual to multiply the fat present by 2.44, so as to obtain the equivalent in starch, and then add the product thus obtained to the carbo-hydrates. The relation of flesh-formers to fat-formers reckoned as carbo-hydrates is then easily obtained. Thus—

Beans in the above table show an albumenoid ratio of	1	to	2.3
Oats " " " " "	1	to	6.4
Maize " " " " "	1	to	8.3

The tables may also be made to demonstrate that a mixture of 100 lbs. of beans and 400 lbs. of maize contains quite as many lbs. of both fat-formers and flesh-formers as 500 lbs. of oats, and at the same time the albumenoid ratio of the former is fully equal to that of the latter. Thus:—

	Albumenoids.	Carbo-hydrates and fat reckoned as Starch.	ratio :
100 lbs. Beans contain ...	25.5 lbs.	and 59.49 lbs.	
400 lbs. Maize " ...	40.0 lbs.	" 335.72 lbs.	
Making a total of ...	65.5 lbs.	" 395.21 lbs.	= 1 to 6.0
While:—			
500 lbs. Oats contain ...	61.5 lbs.	" 391.32 lbs.	= 1 to 6.4
(To be continued.)			

MONTREAL VETERINARY COLLEGE.

THE twenty-second session of the Montreal Veterinary College closed on March 28th, when the prizes won at the examinations were distributed. The chair was occupied by Mr. S. N. Blackwood, J.P., member of the Board of

Agriculture, and amongst others present were G. Leclerc, Secretary to the Board of Agriculture, J. W. Gadsden, M.R.C.V.S., Philadelphia; W. Bryden, V.S., Boston; J. Crawford, J. Kimball, and many of the relatives of the students.

The CHAIRMAN, on rising to present the prizes, said that the examinations this year showed that the students possessed a better knowledge of their profession than in previous years, and hoped those who were leaving the college would continue to uphold the honour of their Alma Mater. He had taken a good deal of interest to find out how the past graduates had progressed, and has discovered that fourteen of them averaged an annual income of 6,000 dols. a year. There was no reason, seeing that this country was yet in its infancy, that those present, if they only put their heart into the branch of study they had chosen, should not attain even to greater results.

Dr. J. W. GADSDEN, of Philadelphia, one of the examiners, being called upon to say a few words, replied that he was astonished at the way in which questions had been answered; they were given deliberately and fairly, especially concerning the two contagious diseases, Tuberculosis and Pleuropneumonia, two subjects they had never seen in this country, and this only proved that they had received a very high standard of training from their Principal, Dr. McEachran, whose great talents in the profession were known all over the American continent. They could not have attained this had they gone through the usual routine enacted by most colleges, which only held two terms before deciding whether a candidate was fit or not. The course laid down by this college of three terms was the best and proper one. It gave the student time to gain practical as well as theoretical knowledge. The one without the other was useless, and must prove to the aspirant who went out into the world to fight for his living a disastrous failure in the end. With regard to the incomes made by past students, they ought to thank their stars they were in Canada; no such incomes could be made in Philadelphia. He hoped to come to Canada to many more of their examinations, so hospitably had he been treated by their Principal, Dr. McEachran, and other gentlemen in this beautiful city.

Mr. W. BRYDEN, V.S., Boston, also spoke a few words of encouragement to the students. As one of its old pupils, he could bear high testimony to the training received in it.

Dr. MILLS hoped that they would not forget their Alma Mater. It was due to the college itself that no matter in what part of the world they located they should correspond with them. It gave a stimulus to future students to try and be as successful as those who had gone before. He wished them long life and prosperity.

The Chairman then distributed the prizes as follows:—

The Prize-winners.

Best General Examination—Silver medal, the gift of the Council of Agriculture, to the student who obtains the highest percentage of marks on all the subjects for his two last years of study, awarded to H. R. Macaulay.

Practice of Medicine and Surgery (senior class)—1st prize, George C. Becket; 2nd prize, James B. Paige; honourable mention, H. R. Macaulay.

Veterinary Anatomy—1st. prize, H. R. Macaulay; 2nd prize, J. B. Paige; honourable mention, John Robertson.

Cattle Pathology—1st prize, J. B. Paige; 2nd prize, H. R. Macaulay; honourable mention, — McGarth.

Chemistry—1st prize, Robert Darling; 2nd prize, J. H. Roberts.

Physiology—1st prize, H. R. Macaulay; 2nd prize, J. M. Parker.

Materia Medica—1st prize, G. A. Wieland; 2nd prize, J. G. Harris.

Pathological Anatomy (presented by Dr. Johnston for proficiency in microscopic work and autopsy)—H. R. Macaulay.

Junior Class.

Practice of Medicine and Surgery—1st prize, J. G. Harris.

Presentation of Diplomas.

The CHAIRMAN then called upon Principal McEachran to present the Diplomas of the Association.

The PRINCIPAL, in a short but pithy speech, exhorted them not to lay aside studies after they had left the college, but to continue them, and try and raise themselves to as high a standard as they could possibly reach, and they would find that their efforts would be crowned with success. He then presented the following students who had fulfilled the requirements of the curriculum and obtained the necessary percentage of marks in their written examinations, presented themselves and successfully passed, viz. :—Messrs. Becket, Craig, Dawes, Macaulay, McGarth, Miller, Munro, Murphy, Paige, Roberts, Robertson, and Smith.

A vote of thanks was then passed to the Chairman, after which the session closed.

ROYAL AGRICULTURAL SOCIETY.

At the monthly Council Meeting on April 11th, Sir John Thorold (chairman) reported that copies of the Pleuro-pneumonia Slaughter Order for 1888 had been laid before the Committee, and they were of opinion that this Order met the views expressed by the Council, but that it was too soon to give an opinion as to its effect. Professor Brown had stated that, in order to carry out the view of the Society as regards the teaching of cattle pathology at the Royal Veterinary College, it was desirable that members of the Society should send to the College any diseased animals (cattle, sheep, or swine), which they would otherwise destroy as useless, and also any specimens of diseased parts of an unusual character. The express transit would be defrayed by the College, and, in the event of living animals being sent, it would be necessary to telegraph to the Royal Veterinary College, Camden Town, the time of their arrival at a London station, so that a van might be sent to meet them.

Professor BROWN had also presented the following report :—

Pleuro-pneumonia.—According to the returns published in the *London Gazette*, it appears that this disease continues to be more prevalent in Scotland than in England. During the past quarter the fresh outbreaks reported in Great Britain amounted to 147, of which sixty were in England and eighty-seven in Scotland, while the total cattle attacked numbered 605, of which 245 were in England, and the remaining 360 in Scotland. These figures show a decrease as compared with those for the corresponding period of 1887, when the outbreaks in England were sixty-five, and the number of cattle attacked was 291, and in Scotland the outbreaks then amounted to 112, and the cattle attacked to 516.

In England during the present year the disease has been most prevalent in the counties of Kent and Lancaster, while in Scotland it has been most prevalent in Aberdeenshire, where there have been fewer than forty-four outbreaks, most of them directly traceable to the purchase of fresh stock at public sales, a considerable proportion of which were no doubt previously infected.

Swine Fever.—The outbreaks of this disease reported in Great Britain during the thirteen weeks ending March 31st amounted to 1,025, and the swine attacked to 5,838. Of these 3,151 were killed, 2,153 died, and 495 recovered. This compares favourably with the returns for the first quarter of 1887, when there were 1,223 fresh outbreaks, and 6,907 swine attacked. The Swine Fever returns for the past three or four years show that towards

the end of the first quarter of the year a gradual increase of this disease usually begins and continues through the second and third quarters, but up to the present this annual extension of the disease has not taken place this year.

Anthrax.—The number of outbreaks of this disease reported in Great Britain during the quarter ended 31st March has been fifty-seven, and the number of animals attacked 164. Of these 104 died, and forty-four are reported as having recovered.

Lord EGERTON of Tatton, referring to the inquiries which, as stated at the last meeting of Council, he had addressed to the Home Secretary on the subject of the inoculations for Quarter-ill practised upon his herd by Professor Penberthy, said he had received, on March 8th, a reply from the Home Office in the following terms:—

The distinction has hitherto been drawn and upheld in dealing with inoculations, and the application of the Cruelty to Animals Act, 1876, that if the inoculations are performed with a *bonâ fide* belief in their efficacy, in order to produce a practical result—viz., the prevention of disease in a particular case—they constitute simple veterinary operations, but if performed with a view to test or verify a theory, they constitute experiments under the Act for the legal performance of which a licence is necessary.

This answer had been submitted by his (Lord Egerton's) request to Professor Brown, who had kindly drawn up the following memorandum on the subject:—

In the reply of the Secretary of State to the inquiry submitted by Lord Egerton of Tatton, it is stated in effect that inoculations do not come within the provisions of the Cruelty to Animals Act of 1876, if the operator is in a particular mental state—viz., if he has faith in the efficacy of the operation.

In reference to this definition, it could easily be proved that a large number of operations connected with the medical and surgical treatment of the lower animals would properly come under the provisions of the Cruelty to Animals Act of 1876—for instance, the injection of new remedies under the skin (hypodermically), the operation of firing, rowelling, blistering, and setoning which are frequently performed without any *bonâ fide* belief in their efficacy, but rather for the purpose of testing their curative or preventive value. A stock owner may, for example, send for a veterinary surgeon and request him to put setons in the dewlaps of his calves, and the operation is performed, although the operator may not have any belief that benefit will arise therefrom. The same remark applies in many cases where a horse's legs are fired or blistered by direction of the owner, and frequently in opposition to the views of the operator. Indeed, it appears that according to a strict reading of the Cruelty to Animals Act of 1876, persons performing operations on the lower animals are liable to be summoned, and made to prove that they had a *bonâ fide* belief in any operation in which they may have performed. In order to avoid this danger an operator would have to commit the manifest absurdity of examining himself as to his faith in the efficacy of an operation before he undertook to perform it.

It is quite evident that unless veterinary science is to remain in a stagnant position something must be done to remedy this anomalous state of affairs.

(Signed)

G. T. BROWN.

March 22nd, 1888.

He (Lord Egerton) would like to ask Professor Brown what were the alterations of the law capable of being drafted in a bill which the veterinary profession desired to enable them to carry out experiments on the farm outside their laboratories or operating rooms, for remedying diseases of animals on the farm.

Professor BROWN stated that it was really the case that unless an operator

believed in what he was about to do, he could not legally perform an operation. He contended that according to a common-sense interpretation of the Act, there are hundreds of cases in which veterinary surgeons performed operations without anything like an approach to a *bonâ fide* belief within the meaning of the Act. He suggested that the Society should take the matter up, and ask the Government to introduce a short Bill exempting veterinary surgeons from the provisions of the Cruelty to Animals Act where there was a *bonâ fide* intention of doing good to the animals and preventing suffering. No one, not even the most sensitive humanitarian, could object to this.

After some further discussion, it was decided that the Council should invite the authorities of the Royal Veterinary College to join with them in approaching the Government, with a view to the introduction of a Bill on the subject.

Army Veterinary Department.

Veterinary Surgeon Richardson has arrived in England on six months' sick leave, and Veterinary Surgeon Bradell on six months' privilege leave, from India. Veterinary Surgeon Haslam has returned to India, having been pronounced by his Medical Board fit to serve in that country.

Owing to the heavy demands on the Veterinary Department, the Secretary of State for War has sanctioned the retention of four supernumerary veterinary surgeons for the present. This will absorb all the supernumeraries caused by the inexcusable reductions in India; so that, as vacancies now occur, candidates will have an opportunity of obtaining admission to the Department.

A General Army Order has been issued, notifying that for all officers, including those of the Department, the tour of foreign service has been extended from five to six years.

Obituary.

THE Army Veterinary Department has had the misfortune to lose no fewer than four of its officers in less than eight months, the last death occurring on April 16th, when John A. Rostron, M.R.C.V.S., 2nd Life, died suddenly at Windsor, from disease of the heart. The deceased officer graduated in 1864, and joined the army in 1867. He served for several years in India and at home in the Carabineers and 5th Lancers, and when the present Principal Veterinary Surgeon was transferred to the War Office from the 2nd Life Guards in 1879, Mr. Rostron succeeded him in that regiment. With the Household Cavalry he served in the Egyptian Campaign of 1882, and was present at the engagements of El Magfar and Mahsameh, and two actions at Kassassin and the battle of Tel-el-Kebir, for which he received the medal and clasps and bronze star. By everyone who knew him he was greatly esteemed; and by those who were most intimate with him, and were cognisant of his goodness of heart and sterling worth, he was considered as more than a friend. Among his brother officers of the 2nd Life Guards he was regarded with feelings of affection, and his untimely and painfully sudden demise caused deep sorrow among them, as it has done among his numerous friends. When his body was removed from the Windsor Cavalry Barracks to the Great Western Railway station in that town, for conveyance to Bolton, his native town, it received full military honours, the whole regiment attending, and the band playing the Dead March in *Saul*. No higher tribute could

be paid to one, who by his conduct and manner, had well earned it. Mr. Rostron became a Fellow of the Royal College in 1881.

The following deaths have been reported:—

S. Sparrow, M.R.C.V.S., Cambridge, graduated in 1834.

J. Markham, M.R.C.V.S., Rugeley " 1839.

J. Jones, M.R.C.V.S., Leintwardine " 1853.

On April 4th, William Boyce, eldest son of William Barrow, Esq., Veterinary Surgeon, Newmarket, aged forty-one.

Parliamentary Intelligence.

House of Commons.

PLEURO PNEUMONIA IN CATTLE.

ON March 9th, Mr. Walter Long, in reply to Mr. Hozier, who asked whether the proposed committee of inquiry into Pleuro-pneumonia in cattle was to be empowered to conduct practical experiments, with the view of ascertaining the value of inoculation, and, if not, why not, said that no definite answer could be given until the committee was formed. It was for the committee to decide what evidence was necessary to enable them to come to a sound conclusion.

Notes and News.

EXTRAORDINARY VACCINE GESTATION.—We have been informed, says the *Journal of the National Agricultural Society of Victoria*, of a remarkable case of length of time of gestation in a cow which occurred lately at Toorak. The period extended from 23rd February, 1887, to 14th January, 1888, or 325 days, a heifer calf being produced. According to Mr. Tessier, an accurate observer for over forty years, who gave the results of over 575 cows, the longest period of gestation was 321 days, the mean time being 303 days. Earl Spencer also carefully tabulated a record of 766 cows, the least period of which was 220 days, the mean 285 days, and the longest period 313 days. He stated that he was able to rear no calf produced at an earlier period than 240 days. The longest period hitherto recognised by authorities as that at which a sound calf might be produced, was that given by Mr. Tessier of 321 days, but Australia now beats the record at 325 days.

BEQUEST TO THE ROYAL VETERINARY COLLEGE.—Lord Northwick has left a legacy of one hundred pounds to the Royal Veterinary College, London.

THE UREA CENTRE.—In the animal economy, centralisation is carried to its most extreme degree. It is certain, from Brown-Séquard's experiments, that there exists a centre, irritation of which can suspend the chemistry of the body, making the blood in the veins flow red and reducing the temperature of the body. MM. Sée and Gley, experimenting on dogs with a view to producing glycosuria, caused azoturia by irritating the central end of the divided right vagus with a mixture of glycerine, water, and lycopodium, injected into that part of the nerve after section.

SWINE PLAGUE.—Swine Plague appeared in Sweden for the first time towards the end of last year, and, in spite of the very active measures adopted for its suppression, it still lingers in the districts into which it was first introduced.

A PROLIFIC EWE.—Early in March, on the farm of Mr. J. Tracey, near Queenstown, a ewe gave birth to five lambs. This prolific animal had also

five lambs at one birth last summer, and during the past five seasons gave birth to twenty-two lambs—an unprecedented occurrence.

SPURIOUS SUPERFETATION IN COWS.—A writer in the *Live Stock Journal* sends the following:—It may be interesting to your readers to hear of a most unusual, and I think I may say extraordinary, birth of two calves from a Jersey cow in my herd. This cow has produced a cow and bull-calf at an interval between of three weeks, the cow calf being dropped on March 9th, and the bull-calf on the 2nd April. On examining the stockman's service-book, there is recorded against this cow but one service, on the 22nd June, 1887. When the cow-calf was dropped, on the 9th March, we assumed that it was three weeks too early. The cow curiously took very little notice of the first calf, and she yielded no milk till the day the second calf was dropped. Both calves are well formed, the first calf being smaller, but quite as large as could be expected from a calf produced three weeks before time, the second calf a full-sized strong calf. Both calves and dam also are doing well.

VETERINARY SURGEONS IN BELGIUM.—In Belgium there are 521 veterinary practitioners, of whom 242 are in the Government service, 217 in general practice and in the army, and 62 belong to the class designated as *Maréchaux Vétérinaires* or Farrier Veterinarians.

AN AGED VETERINARY SURGEON.—The *Semaine Vétérinaire* states that there is now living at Ville-Evrard, a *confrère*, M. Renandin, who is 104 years of age, is in good health, does not smoke, and can read without glasses. He was present at the battles of Leipzig and Waterloo.

FECUNDITY IN SHEEP.—It has been recently reported that a half-bred ewe, the property of Mr. G. J. Bell, The Nook, Irlington, produced no fewer than six lambs, all of which were matured and of ordinary size. The first two are alive and well, but four of the prolific birth were born dead—a fact that is attributed to protracted parturition. A few nights later a Shropshire ewe, belonging to the same gentleman, produced four lambs, all living, and two half-bred ewes gave birth to triplets each. The lambs are all sired by Shropshire rams. This is not unlike an American item of news!

A RICH VETERINARY SURGEON.—The value has been declared at £45,711 of the personal estate of the late Thomas Jex, of 15, Victoria Street (formerly veterinary surgeon of the Scots Greys and the 1st Life Guards), who died on the 15th of February last. It need scarcely be remarked that Mr. Jex did not acquire his fortune while in the army, but after he retired, by becoming a wine merchant.

STAMPING OUT CONTAGIOUS PLEURO-PNEUMONIA IN THE UNITED STATES.—In an interview with Mr. J. W. Gadsden, M.R.C.V.S., of Philadelphia, an authority on Pleuro-pneumonia, he said that the United States owed a great debt to Professor McEachran, of Montreal, for the manner in which he had worked to stamp out this dangerous contagious disease, which up to now had cost the Government nearly 1,000,000 dollars in damages for cattle destroyed. In 1879 Professor McEachran went through the States inquiring and collecting facts on the subject. He then laid the information he had collected before the United States Government, which, owing to his earnest and convincing arguments, and in anticipation of the dire results likely to ensue if the disease were not speedily got rid of, caused proclamations to be made in the different States where it was prevalent, ordering that all animals suffering from it be destroyed and compensation made to the owners. This was done. In Maryland over 3,000 head of cattle were destroyed, for which compensation to the value of 75,000 dollars was paid. In New York and other States this sum has been exceeded, so that it will be seen what a great work Professor McEachran has done. The only State remaining to be similarly dealt with was Pennsylvania, but a law similar to those in existence in the other States came into operation there on April 9th.

REPORTED CURE FOR PLEURO-PNEUMONIA.—The Hungarian Minister of Agriculture has officially informed all agricultural societies that the manager of the spirit distillery at Raab, Herr Leopold Mandl, has discovered a remedy against Pleuro-pneumonia. The matter has been examined scientifically and practically, and the remedy is stated to have been found to be an efficient preventive against this destructive disease in cattle, while it is harmless to men and animals. The loss to Hungary from this disease has of late amounted to fifteen million florins yearly.

THE VALUE OF LIVE STOCK.—An American has computed the value of live stock in the United States at 1,279,560,190 dols., which is more than the combined value of the stock of all other countries. Russia and Great Britain each have 80,000,000 dols., Germany, 60,000,000 dols., and Austria-Hungary, 35,000,000 dols.

Correspondence.

ANIMAL TUBERCULOSIS.

SIR,—In reference to the subject of the address by Principal Walley on Animal Tuberculosis at the meeting of the Medical Chirurgical Society of Edinburgh, on February 16th, 1888, I beg to send you some observations appertaining to it.

It seems to me that the agitation about this epidemic in cattle is now about the stage that the one on Consumption in the army was some thirty to forty years since—the stage of discovery and astonishment by the public at its great prevalence, though everybody in the profession knew it well, but did not openly denounce it. Very similar sanitary measures may likely require to be taken now with our domesticated cattle, as then with the circumstances of our affected soldiers and sailors.

The stables and byres will represent the barracks of old, and they will require to be purified by scientific ventilation, and maintenance of cleanliness and purity by disinfection, and by free admission of light and air.

The onus of remedying the evil will rest on the veterinary profession; and the medical, which has done its duty by its affected subjects, may freely tender its advice and assistance.

The *crux* of the question appears to me not to lie in the correction of modes of transmission of the virus of Tuberculosis, but in adopting effectual methods of suppressing it at the fountain head.

This may only be done by applying modern hygiene to domesticated animal life, as successfully as it has been done to human life in our large towns and public establishments.

Consumption has now been effectually got under in the public services, and the horrors of the old barrack rooms and men's rations no longer exist as they did, when our *élite* of the Foot Guards were decimated by its ravages.

The citadel has not yet been attacked in force by the veterinary profession, and only the outposts have been skirmished with as yet.

The ventilation will require to be made independent of stablemen, by means of shafting; the scavenging and watering will need regular attendance, and exuvia cleaned up at once. Exercise should also form a part of the discipline, and cows should be taken out regularly, and walked about the yards or paddocks, instead of being tied up all day. More windows in the buildings will be wanted also; in fact, the means of amelioration of living are at present a manual full, and quite unapplied as yet, for the public benefit.

It may hopefully be intimated, that the epidemic will subside when unitedly

attacked, for here we have not to fear being undermined by affected food, as in man. The animals diseased are not carnivorous, but herbivorous; so the vegetable food may not yet lie under suspicion of transmission of the virus by adulteration or degeneration.

The origin and nursery of this Animal Tuberculosis will, therefore, presumably be owing to virtual ignorance, or neglect of domestic hygienic rules, as applied to animal life in general.

Pamphlets might be circulated amongst stablekeepers and dairymen stating these, the evils of their violation, and the benefits of acquiescence in the recommendations of the authorities in veterinary science.

W. V. BLACK, F.R.C.S.E., *Surgeon-Major*.

United Service Club, Edinburgh, *March*, 1888.

BOVINE AND HUMAN TUBERCULOSIS.

(The following letter on this subject appeared in *The Lancet* for April 7th.)

SIRS,—The letter of Dr. Creighton in *The Lancet* once more draws attention to the most important subject of Bovine Tuberculosis, and its relationship to Tuberculosis in mankind and other creatures. There is no need, in discussing such a serious matter, to wrangle about whether the medical or veterinary profession initiated investigations into the communicability of the disorder. Since the end of the last century veterinary surgeons have been observing and studying its manifestations in cattle, and early in this century had arrived at certain conclusions with regard to it. For more than a hundred years the flesh of Tuberculous cows has been looked upon with suspicion, and at different times in some continental countries laws have even been passed forbidding its sale for human food. The milk of Tuberculous cows has also at times been condemned, though not altogether because there was any supposed danger attached to it, but because it was poor in quality. Dr. Creighton is right, so far as I know, in ascribing to Klencke the first published notice of the communicability of the malady to mankind by means of the milk of "scrofulous" cows. But the evidence rested only on clinical observation, and though the cases he adduces appear to warrant the conclusion he arrives at, and though, also, in recent years similar observations have been made public, yet they are not absolutely convincing that the human species can be, or has been, so infected. But clinical observation and most careful experiments on animals have gone far to demonstrate that infection of mankind by the flesh and milk of Tuberculous animals is possible—nay, very probable. And in this demonstration members of the veterinary profession have played a very important part, though Villemin, of the Val de Grâce Hospital, Paris, in 1865, and again in 1866, led the way in experimental investigation. Soon afterwards Gerlach, then principal of the Hanover Veterinary School, undertook a series of experiments, which were conclusive as to the communicability of the disease to various species of animals. At the same time (1868) Chauveau, then at the Lyons Veterinary School, instituted experiments which had the same results as those of Gerlach, and proved beyond doubt that the disorder could be conveyed not only by inoculation, but also through the digestive apparatus. Chauveau was, I believe, the first to indicate the danger of allowing the flesh of Tuberculous cattle to be utilised as human food. The veterinarians, Harms, Günther, Bollinger, Bagge, Zürn, Semmer, St. Cyr, Jolin, Leisering, and others, experimenting in the same direction, all reached the same conclusions, and, with Toussaint of the Toulouse Veterinary School, undoubtedly showed that flesh and milk were infective.

So strong and so startling was the evidence thus accumulated, and so

alarming did the matter appear with regard to the public health, that in the *British and Foreign Medico-Chirurgical Review* for October, 1874, I called attention to its urgency, gave the chief facts—clinical and experimental—recorded up to that time, and concluded the paper as follows:—"From what has been already ascertained, there is every reason to view with grave suspicion the use of the flesh of Phthisical cattle as food, especially if the disease is much advanced and the tissues are generally involved. But with more reason the milk from cows affected with Tuberculosis should be prohibited, more particularly for the use of infants, who mainly rely upon milk for their sustenance, and whose powers of absorption are very active. Even if this milk did not possess such dangerous infective properties, its deficiency in nitrogenous matters and in fat and sugar, and the increased proportion of earthy salts, would alone render it objectionable as an article of diet. It has long been known that it was liable to produce Diarrhœa and Debility in infants; but though many children fed on such milk may have died from general or localised Tuberculosis, the part probably played by this fluid in its production has not been suspected." Since that time I have seized every opportunity of insisting upon the danger of Tuberculosis in cows, in the *VETERINARY JOURNAL*, in public addresses, and especially in my work on "Veterinary Sanitary Science and Police" (vol. ii.), published so long ago as 1875, I have earnestly endeavoured to point out the destructiveness of the disease among cattle, and the peril to which its extensive prevalence exposes our own species. In the report which, in conjunction with Dr. Lydtin, Principal Veterinary Surgeon of the Grand Duchy of Baden, and M. Van Hertsen, Chief Inspector of the Brussels Abattoir, I drew up for the International Veterinary Congress held at Brussels in 1883—which report was translated and published in London in that year, entitled "The Influence of Heredity and Contagion on the Propagation of Tuberculosis"—the injurious effects of the consumption of flesh and milk are fully considered, and the question viewed from a sanitary standpoint. To settle the question conclusively, and bring its serious aspect forcibly home to every mind, we require undoubted evidence of human infection from diseased cattle, and without resorting to experimentation on man, there will always be doubt. But to mention this test is to be condemned as a monster. At the first meeting of the National Veterinary Association, held in London in May, 1883, and at which I had the honour to be president, the subject of Tuberculosis was discussed, and in the course of my observations I remarked: "A great difficulty we meet with is that, while we can experiment upon animals to prove the transmissibility of the malady from one to another, we cannot do so with regard to the human species. It has struck me that we sometimes waste human life—that we throw away very good opportunities for experiment by the manner in which we dispose of our criminals. I think no better use could be made of those condemned to death than by experimenting on them in this direction. We know that if animals be fed for a certain time with tuberculous matter serious alterations will take place in their bodies, although they may appear to be in perfect health. I do not know whether the hyper-sentimental people, the extreme moralists of this country, would tolerate such a proceeding; but I do think that criminals who so far offend against society as to take away human life should be thus made to atone to society, whose moral principles they have violated. Feeding, or even inoculating, such criminals with the products of Tuberculous animals, in order to discover whether, after execution, such matters have produced in them the pathological alterations noticed in creatures so treated, would decisively, and for ever, solve a most serious sanitary problem." Without such a test, I fail to see what conclusion the Congress which meets in Paris this year to consider the subject can arrive at, beyond what has been already established. The disease is terribly

prevalent in cattle, as everyone knows who frequents slaughter-houses or cowsheds, and it is on the increase, our very choicest breeds being greatly involved. Unless legislative measures are promptly introduced to limit or suppress its ravages, it will cause fearful havoc among our live stock, if it does not ultimately exterminate it.

GEORGE FLEMING, F.R.C.V.S.,
Principal Veterinary Surgeon of the Army.

March 27th, 1888.

THE VETERINARY AND MEDICAL SCIENCES.

SIR,—The editors of *The Lancet*, in a recent number of that journal, drew attention to the necessity for the co-operation of veterinarians and medical practitioners in matters relating to disease, especially as to "optical appearances of morbid or healthy tissues in our domestic animals."

They say that "much that is known as to the pathology and etiology of the diseases of the lower animals, as they affect man by way of food or otherwise, has been the result of the labours of officers of health and other medical men under whom the inspectors work; and that, even at the present juncture, when such questions as the development of Scarlatina from a bovine disease, or the relation of bovine to human Tuberculosis, have arisen, it has been members of the medical profession who have taken the initiative in studying and discussing the subject."

Under the qualifying condition they mention, viz., in the case of Scarlatina studied in England by *specialists* in the medical profession—who are evidently at loggerheads with each other, even up to date, regarding the opposite conclusions reached—we are in entire agreement with them; but we should add, that much that is known as to the pathology with regard to at least one of the maladies mentioned, namely, Tubercle in animals, has been the result of the labours of veterinarians, on the Continent especially. Besides, we strongly object to the practice under which medical men are allowed—as in the army—to pass carcasses as healthy food for soldiers, under existing regulations, especially such officers as have had no practical, or even theoretical, knowledge as to the optical appearances of morbid or healthy tissues *in our domestic animals*. What, for example, can be a more unpardonable act of heedlessness than the incautious way of trusting young surgeons, or even physicians, to do the work of veterinarians? Yet the above practice is actually authorised by order, against which even reasoning such as *The Lancet* would, we fancy, support, availeth naught. What, for example, would *The Lancet* say if a man suffering from some specific disease of the eyes, were to be sent to the general practitioner for operation when an ophthalmic surgeon was near by?

It is much to be feared that veterinary science is only too often divorced from the medical, with a singular lack of appreciation regarding the difference between specialists and general practitioners, and between general practitioners and general practitioners in the "two" professions. Because medical men are leading bacteriologists in England, that is no reason for supposing that veterinary science, as a specialty, is not necessary, and an integral part of medical science, and *vice versâ*. It is absurd, on the face of things, to speak of either science as independent of the other. Bacteriology, indeed, has an interest of its own, as it owes its origin to continental scientists chiefly, and has only now, as it were, begun its development in England. We may add, however, on the very highest authority in England, that its application to a *very* few diseases is as yet possible, and that for all other diseases attributed to bacteria, we are, for all practical purposes—"as you were!"

"A READER."

India, February 29th, 1888.

OPERATION FOR SIDE-BONES.

SIR,—In the VETERINARY JOURNAL of last December I read with very great pleasure Mr. F. Smith's paper on "A New Operation for the Cure of Lameness arising from Side-bones." At that time I was treating an aged cart-mare with very large Side-bones and bad contracted heels, which made her exceedingly lame. I had fired and blistered the foot without the least benefit. I at once made up my mind to try Mr. Smith's treatment, and operated on her as described in his paper, telling the owner to work her daily. I was astonished to find, in less than two weeks, that she was walking perfectly free from lameness, and in one month from operating on her she trotted sound.

Since then I have operated on numerous horses with Side-bones with success in every case. One case especially was that of a five-year-old cart-mare, going dreadfully lame from a very small Side-bone. She had been blistered several times and fired, and had six months' rest, but still she remained as lame as ever. I operated on her, and in three weeks she trotted sound.

I notice, in the discussion on Mr. Smith's lecture at the Southern Counties Veterinary Medical Association, that several veterinary surgeons did not believe that the horse's foot expanded. I can quite substantiate Mr. Smith in saying it does. I have found, as he has, that after sawing through the wall of the hoof, then filling up the cracks with soap, and walking the horse a few yards, the soap squeezed out, which is good proof the foot does expand. I trust that all those veterinary surgeons who have not tried Mr. Smith's treatment for lameness caused by Side-bones will do so, and I can safely say they will meet with success.

HARRY A. BARRETT, M.R.C.V.S.

Nuneaton, 16th April.

VACCINATION AS A PREVENTIVE OF CANINE DISTEMPER.

SIR,—At a meeting of the Yorkshire Veterinary Medical Association, Mr. Briggs, of Halifax, initiated a discussion on the above subject, having previously alluded to it in the Journal of last month.

It would seem that the disease known as Distemper in the dog has as much relation to Variola as the intestinal lesions of Typhoid have to a compound fracture of the patella—Variola, on the one hand, being a specific eruptive fever; Distemper, an influenzoid affection, not characterised by any eruption, and totally different in its course and terminations from any variety of pock. No definition of Variola, human or animal, is complete without special reference to the character and phases of the eruption, the individual lesions of which, in all cases, tend to the production, successively, of a vesicle, papule, pustule, and scab. If this sequence is in any way curtailed, as it is said to be in Variola ovina, the presence of an eruption, at least, is in all instances constant.

Notwithstanding, however, the palpable differences in the nature of the two diseases, it seems yet within the bounds of reason to suppose that the specific poison of Variola may so react upon the tissues of the dog as to render them unsuitable pabula for the development of the morbid material of canine Distemper.

If, however, this hypothesis is tenable—and I question very much if it is—would it not be more reasonable to expect that inoculative material, taken from a case of the disease itself, would be more likely to prove inoculatory efficacious than the virus of a different disease? From what we know, relatively, about inoculation and its results in kindred diseases, this would seem probable.

From the evidence at present at our disposal it is impossible to arrive de-

finutely at a conclusion one way or another, and the state of the case seems briefly to be this : That, on the one hand, it is not absolutely impossible that the vaccine lymph may prove protective against Distemper, and, on the other hand, it is highly improbable that such apparently distinct diseases can exercise any protective influence with regard to one another. Further than this, that certain people claim for the operation the most satisfactory results, without, however, recording whether or not, succeeding their inoculations, they produced the vesicles proper to the success of ordinary vaccination.

Pending the advent of more reliable data, one necessarily looks upon the question in a spirit of agnosticism ; the beneficial results vouched for by persons of integrity being simply, as Mr. Briggs suggests in his letter, the result of baffling coincidences. There seems, latterly, to be a tendency to rather overdo the germ theory, and give us too much of a good thing. But there are stranger things in heaven and earth than are dreamt of in our philosophy.

FITZ-EASSIE, M.R.C.V.S.

"MR. GREAVES AND THE BOARD OF EXAMINERS."

DEAR MR. EDITOR,—Would you kindly afford me a little space in your journal to reply to some misleading assertions which have been distributed among the members of the profession, by means of a circular with the above title.

Let me first of all frankly acknowledge that I was the examiner to whom reference is made in the circular as having asked the student, who was accorded a second examination, the question, "What is Ectopia Cordis?" So far the assertion is correct, but immediately following I find the author of the circular says : "The student had neither it explained in his lectures nor read of it in his text-books, and consequently could not answer the question, and was of course floored." If the student had neither heard of it in his lectures nor read of it in his text-books, then it must have been on account of absence from or inattention to these lectures ; as his teacher distinctly avers that he was taught it, and the same may be said as to his text-books ; if he did not see it there, it was for want of looking. It does not follow that the student was at once "floored," as that was certainly only one of many questions.

This subject, however, will bear some explanation. The student had a most patient and painstaking examination, and in his practical examination showed lamentable ignorance of the most elementary details. The subject of his morning examination having been talked over with his Principal, that gentleman said that my questions had been certainly very simple, and that probably it was on account of their simplicity that he had failed. He (the Principal) could assure us (the examiners) that the student answered well in class, that he was well read, and more than an average student, particularly in our subject ; that if we would ask him something out of the common, we would be sure to get answered. My late colleague was equally dissatisfied with the answers he had received, but as the other examiners had been satisfied, it was agreed to accede to the Principal's request that he should have another examination from us.

But for the Principal's statement, the question would not have been asked, not because an answer was not to be expected, but because the question was of so little practical value that I never asked it before or since. At the same time, I must take exception to the statement, "That very few medical men or veterinary surgeons ever heard of it," and I think that statement can only be attributed to the limited intercourse with veterinary surgeons or medical men of any standing which the author of the pamphlet holds that he has been unable to elicit a reply from any one better acquainted than himself with the literature or the *lusus naturæ* to be met with in our profession. I am sure, Mr. Editor, that were it necessary to trouble my late colleagues and

the Principal of the school on this subject, they would all bear me out in statement of facts with regard to the examination of the student referred to. Those who are best acquainted with the pamphleteer will not be surprised at the charlatan method by which he seeks to further his candidature; but I feel confident that the profession will be quite capable of eliminating such dross from the pure metal at the forthcoming election.

ARCHIBALD ROBINSON.

P.S.—I may state that the student referred to failed at a subsequent examination to satisfy the examiners at a different table, and was again rejected.

MR. GREAVES' COURT OF APPEAL.

SIR,—I have often wondered why gentlemen possessing any feeling of self-respect would seek election as members of Council, or allow themselves to be selected as examiners of students, when I see the way in which they are treated by a certain set of persons in the profession, and especially of late years. The fine touch of irony in Mr. Kidd's letter in your last issue, embodied in his allusion to the "plums" which Councilmen and examiners gather from their office, is very amusing. I suppose these figurative plums are gathered at the annual meetings, when abuse is usually hurled at the luckless individuals who represent the Council by those who imagine their rôle is the very easy one of fault-finding with men who certainly do make somewhat heavy sacrifices for the profession, which their assailants take very good care to avoid. I have attended several annual meetings, and it has not been my good fortune to have ever heard a vote of thanks proposed for the Council for what it does during the year. Crack-brained, angular professors, and very clever (?) *talking* practitioners, consider they are distinguishing themselves by picking holes in Councilmen and examiners, and display what they fancy, no doubt, their transcendental abilities in doing so.

I might dilate much on this, but forbear, as my object now is to allude to a circular which I have received from Mr. Greaves, in which, while extolling what he has done for the profession, he asks me to give my vote for his re-election as a Member of Council. Now, I do not like such circulars, neither do I approve the tone of Mr. Greaves' one; but what renders his conduct very objectionable in the matter is the printed leaflet he encloses, in which are two subjects he had written on, and has had reprinted. One of these subjects is on the "Board of Examiners," and the other on a proposed "Court of Appeal" for rejected students. I only now refer to the latter, not with the object of showing how utterly ridiculous the proposal is, nor how contradictory and illogical are its terms, but to show how unfair Mr. Greaves can be when he is anxious to catch votes. He casts grave imputations upon the fairness and honesty of examiners, which I defy him to prove. He gives an instance, but before doing so he ought to have inquired into the facts of the case, for I assume he is ignorant of them, and of the circumstances in which a student was asked, "*What is Ectopia cordis?*" If he cares to inform himself, I fancy he will be sorry that he made any reference to the case. He says: "The student had neither heard it explained in his lectures nor read of it in his text-books, and consequently could not answer the question, and was of course floored. I find there are very few medical men or veterinary surgeons who ever heard of it. Now, I ask, is there either sense or reason in appealing to such a tribunal as this?"—meaning the Board of Examiners.

Now, sir, I must enter my protest against this imputation of ignorance on the part of medical men and veterinary surgeons. Mr. Greaves should not measure other people's knowledge by his own. He may never have heard of *Ectopia cordis*, but that should be no reason why others should not be familiar

with the designation which, to my ken, is known to many of my colleagues, and I am certain to all medical men. Not only this, but it is found in all veterinary and medical text-books which treat of certain branches of medicine. For instance, take veterinary literature. In my very small library I find the condition described by that name in Williams' "Veterinary Medicine," in Steel's "Diseases of the Ox," in Hill's "Bovine Medicine and Surgery," and in your own "Text-book of Veterinary Obstetrics" (p. 395), in which it is not only described, but a drawing is given of it.

In fact, sir, so common is the designation that a student who did not know its meaning well deserved rejection, as ignorant of his profession and illiterate; while the veterinary surgeon who had never read of it—well, I should think he would make a very distinguished member of Mr. Greaves' Court of Appeal, and a good illustration of the kind of intelligence of those who attempt to traduce the reputation of the profession for the sake of obtaining votes from its members. When gentlemen are so anxious to display their ignorance of professional knowledge, as in this instance, what might we expect the Court of Appeal to do sometimes? I think it is a thousand pities that Mr. Greaves did not show his Court of Appeal effusion to some kind friend who understands scientific phraseology, before it was sent to the printer. The profession would have been spared a painful blush, and its enemies much amusement.

F.R.C.V.S.

April 13th.

ANSWERS TO CORRESPONDENTS.

AN EDINBURGH STUDENT.—The Royal College of Veterinary Surgeons has not yet decided, we believe, as to the Foreign and Colonial Schools whose graduates may be allowed to practise in this country. Some time ago a Committee was appointed to report on the subject. At present, no person who is not in the Register of Veterinary Surgeons can practise in the United Kingdom. To obtain the diploma of the Alfort School the full course of study would have to be gone through by a M.R.C.V.S.

J. B.—Apply to the Principal Veterinary Surgeon of the Army.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from Dr. Black, Edinburgh; A. W. Hill, London; A. Leather, Liverpool; J. A. Nunn, A.V.D., Natal; H. Gray, Calverton; P. Walker, Halifax; "A Reader"; E. A. W. Hall and R. W. Burke, A.V.D., India; F. H. Reeks, Spalding; J. McGavin, Montgomery; J. Malcolm, Birmingham; L. Browne, Edinburgh; T. Hopkin, Manchester; W. D. Fairbairn, Cupar; E. Hollingham, Tunbridge Wells; F. Smith, Aldershot; H. A. Barrett, Nuneaton; A. Leather, Liverpool; "An Edinburgh Student"; T. A. Smith, Calcutta; "J. B."; Fitz Eassie, York; A. Robinson, Greenock.

BOOKS AND PAMPHLETS: Successful Bee-keeping; R. Schmalz, Die lage der Eingewiede und die Sektions-Technik bei dem Pferde; A. Sanson, Alimentation raisonnée des Animaux Moteurs et Comestibles; A. Peters, The Value of Veterinary Science to the State.

JOURNALS, ETC.: *Archiv für Wissenschaftliche und Praktische Thierheilkunde*; *Der Thierarzt*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Recueil de Médecine Vétérinaire*; *Lancet*; *British Medical Journal*; *Animal World*; *Echo Vétérinaire*; *Hufschmied*; *Edinburgh Medical Journal*; *Journal of Comparative Medicine and Surgery*; *Gazetta Veterinaria*; *Annales de Médecin Vétérinaire*; *Clinica Veterinaria*; *Journal de Méd. Vétérinaire*; *Revue de Médecine Vétérinaire*; *Veterinary Review*; *Live Stock Journal*; *Tidskrift für Veterinär Medicin*; *American Live Stock Journal*; *Journal of the Agricultural Society of Victoria*; *London Medical Record*.

NEWSPAPERS: *The Scotsman*; *Baltimore Sun*; *Montreal Herald*; *Glasgow Herald*; *South-Eastern Gazette*.

THE VETERINARY JOURNAL

AND

Annals of Comparative Pathology.

JUNE, 1888.

ANALYSIS OF THE SALIVA OF THE HORSE.

BY PROFESSOR FRED SMITH, ARMY VETERINARY SCHOOL,
ALDERSHOT.

THE following notes on the composition of the salivary secretion of the horse may prove of interest. The analysis has been made in the laboratory of this school, the saliva examined being secreted under the action of pilocarpine, which latter may explain some of the peculiarities observed respecting its sugar-converting properties :—

Analysis of the Mixed Saliva of a Horse.

Water	...	...	...	...	...	99·4495
Organic matter	{ Mucus Albumen Ptyalin(?) }			...	...	·2213
Ash	{ Soluble in water			...	...	·2677
	{ „ in acid			...	...	·0615
						<hr/> 100·0000

The above saliva had a strongly alkaline reaction, its specific gravity was 1,004, it was turbid, viscid, and frothy, and deposited on standing crystals of carbonate of lime; it gave no potassic sulphocyanide reaction with ferric chloride.

In the ash was found chlorides, sulphates, phosphates, lime, magnesia, soda, and potash. The chlorides, lime, and magnesia were in much the largest proportion.

By the recognised process for extracting ptyalin I obtained, after allowing the vessel to stand two months, a very slight flocculent deposit, which it is impossible to believe was ptyalin, as this saliva was not sugar-converting.

On endeavouring to ascertain the diastatic properties of this

mixed saliva I found that it *would not* convert starch into sugar, and repeated experiments justify the conclusion that the saliva of the horse secreted under the conditions named (and probably even when formed under natural conditions) will not convert starch into sugar.

I was prepared by Lassaigne's experiments* for the fact that the parotid saliva of the horse does not possess a diastatic property, but I had yet to learn that the mixed saliva did not possess the starch-conversion power.

It may yet be proved that mixed saliva secreted by pilocarpine does not possess the power, whilst the same saliva secreted under normal conditions may possess it. On this point I am not prepared to speak.

I have worked with extracts of normal salivary and pancreatic glands to determine their sugar-forming power, but up to the present have been much dissatisfied with the results obtained.

THE ACTION OF PILOCARPINE UPON HORSES.

BY THE SAME.

PILOCARPINE is derived from the dried leaflets of the *Pilocarpus permatifolius*, and contains, according to Lauder Brunton, a volatile oil and two alkaloids, pilocarpine and jaborine; the latter has an action allied to atropine and is antagonistic to pilocarpine.

The action of pilocarpine on man, as recorded by Lauder Brunton, is to stimulate the sweat and salivary centres, producing a copious flow of saliva and profuse sweating; it also causes increased peristalsis of involuntary muscle; it is excreted by the urine and is not found in the saliva.

The action of pilocarpine on the horse is to cause in about ten minutes after a subcutaneous injection a profuse flow of saliva; the animal keeps champing his jaws constantly, whilst saliva flows from the mouth sometimes in quite a stream. *There is no attempt at sweating; the sweat glands of the horse are perfectly insensible to the action of pilocarpine.*

The involuntary muscle of the intestinal canal is stimulated, and the rectum is repeatedly emptied. With such good results, it was this circumstance which induced me to combine pilocarpine with eserine. In one case I observed a gulping sound in the throat, resembling the effect produced by aconite.

The effect of this drug on the pulse is very difficult to determine; the constant movement of the jaws induced by the flow of saliva precludes the pulse being taken there. I noticed in

* Colin. Physiologie Comparée.

one case that a horse which had naturally a very intermittent pulse, after receiving 3 grs. of pilocarpine the pulse became regular, but not increased in frequency.

The dose of pilocarpine is from 2 to 3 grs., given either by the trachea or subcutaneously. The drug is readily soluble in cold water; its effects last about two or three hours.

I have to thank Messrs. Burroughs, Wellcome, and Co., for supplying me with pure specimens of the drug for trial.

FOWL CHOLERA—POST-PARTUM HÆMORRHAGE— TORSION OF THE OS UTERI.

BY A. E. MACGILLIVRAY, BANFF, N.B.

IN Fleming's "Veterinary Sanitary Science" we find an exhaustive description of this malignant disease in fowls; also several direct and indirect references to same in his "Animal Plagues"; in fact, this learned author has scarcely left any room for further observations on the subject; but having quite recently been called upon to inquire into a rather remarkable and deadly outbreak of this poultry pest, I venture to bring the same before the readers of the VETERINARY JOURNAL.

The outbreak occurred on a small farm in this district, where fifty-five poultry, mostly of the Dorking breed, were kept. Fifty-two of these occupied one common old-fashioned and very confined poultry-house—"hen-house" as we call it; the other three were in another house sitting upon eggs, *i.e.*, hatching. A nasty ditch ran round the back and west end of the poultry-house; this ditch was quite choked up, and the semi-stagnant moist contents began to ooze through the walls of the poultry-house, giving rise in the warm weather to a rather nasty smell. Observing one of the hens to be sickly-looking, the owner commenced to clean out the floor of his poultry-house, which had not been done for I don't know how long; this raised a worse smell than ever, and nothing was done to make it less. The poultry scraped and pecked away among the turned-out dirt during the day, and were shut up in the confined old poultry-house for the night. In the morning several were dead, and a couple of dozen very ill; the dead ones had apparently died on the roosts and dropped to the floor after death; one or two were, in fact, sitting dead on the roost.

On the second morning, it was discovered that *twenty-one* had died during the night; seeing this, the owner came into Banff and called for me, as he was afraid that his poultry had been poisoned. I visited the farm the same afternoon, and found all the poultry dead, except five hens.

The symptoms presented by the five living hens and those recently dead were as follows : general prostration, unwillingness to move, straddling or rolling gait, ruffled plumage ; drooping, high-coloured, or even black crest, foetid diarrhœa, light-coloured fluid fæces—but discharge from bowels at times bloody, slight protrusion of rectum in some, the protrusion congested or otherwise œdematous ; a discharge from mouth nearly the same as from bowels, and on taking up one or two of the living hens by their legs, the fluid matter literally rushed from the beak ; the eyes were generally much congested. These symptoms became aggravated, and the prostration increased, until death ended the scene.

I made several *post-mortems* with the following results—skin externally red, blue, and even green ; occasionally protrusion of rectum ; the intestines in general have a blood-shot appearance, between congestion and injection, as it were, with now and again a more aggravated state accompanied by internal erosions and ulcerations ; the contents of intestines fluid and very bad smelling, being in general light grey in colour and of the consistency of thin soup ; mucous membrane of the intestines much disorganised and easily scraped off, revealing at times underneath ecchymotic spots and erosions ; liver and lungs very slightly affected, the former lighter in colour than usual, and the latter congested and at times solidified ; the heart invariably ecchymosed externally and internally ; and what struck me as most marked and constant in its appearance, was the widely-present straw-coloured effusions—wherever any loose tissue existed, there these yellowish effusions were to be found. As a rule, the blood was rather disinclined to clot.

The disease, in my opinion, was unquestionably Fowl Cholera, a most deadly outbreak ; and it evidently had its origin some way or another in connection with the very insanitary state of the old poultry-house and its surroundings. I at once ordered a thorough cleaning out and disinfection of this old poultry-house ; and a short time after the owner got together a fresh stock of poultry, but no reappearance of Fowl Cholera has as yet taken place.

With Delafond, I would be inclined to assert the *anthracoid* nature of this poultry malady, and the *post-mortem* appearances presented in this outbreak would seem strongly to bear out this idea.

POST-PARTUM HÆMORRHAGE.

The great importance of this subject to the profession in general, renders any apology unnecessary for bringing it once

more under review. I have already, on more than one occasion, referred to the efficacy of the "Injectio morphiæ hypodermica" in such cases; but it might happen that this was not conveniently available, and as time is everything in these *post-partum* hæmorrhages, it is always as well to have two strings to one's bow. In several very severe cases, I have recently given heavy doses of spirits of turpentine with marked success, having only failed in two cases where the *collapse* was too near *before* the application of the remedy. It was a medical acquaintance who drew my serious attention to the great success in his practice, following the use of spirits of turpentine in primary and secondary uterine hæmorrhage; and this gentleman was very anxious that I would give his mode a trial, and I did so the same night on which he and I had our conversation, with decided success. Since then I have tried it several times with, as I have said, two failures—one of primary and the other of secondary hæmorrhage.

The dose of spirits of turpentine in such cases may vary from three to five ounces, and is best exhibited mixed intimately with the contents of half-a-dozen eggs and a little sugar.

TORSION OF THE OS UTERI, ETC.

It seems from recent correspondence which I have had with several members of the profession, that this untoward complication during parturition is becoming far from uncommon. What can be the reason? A friend of mine, who recently had a very severe and unrelievable case of torsion, and who has been studying the matter with serious assiduity, suggests the idea that "the uterus might be in a twisted condition before impregnation takes place." I think this is quite an admissible idea; but when my friend proceeds to explain *his supposed* cause to be either a prolonged retention of the placenta, or rough usage at a previous delivery, I begin to feel sceptical. I admit that certain kinds or degrees of rough usage during delivery might tend towards displacement of the uterus in some form, but I fail entirely to see the connection between placental retention and "torsion." However, my friend has promised to work out the problem when he finds sufficient leisure, and I will be only too happy either to support him if successful, or knock him down if he fail to satisfy my own thoughts on the subject.

The *unrelievable* case of torsion referred to by my correspondent must, indeed, have been a very extraordinary and uncommonly interesting one. My friend and a neighbouring practitioner worked away from 8 a.m. till 5 p.m., and, being unsuccessful, finished by despatching the poor cow, a lean, miserable-looking creature,

and making a *post-mortem*, during which they found that the twist (a full one) "was firmly held or bound by ligaments and folds of peritoneum," so that no amount of any sort of *rolling* or *jamming* could or would have been of any avail.

REMARKABLE FRACTURE OF THE CRANIUM.

BY T. ASSHETON SMITH, M.R.C.V.S., CALCUTTA.

A RECENTLY imported grey Cape gelding having been saddled in his stall, was brought out on to the tan track to be mounted, when he reared and came right over, the whole weight of the fall impinging on the crest of the occiput. He was completely stunned for about half-an-hour, when he appeared to regain partial consciousness, *i.e.*, the eye became sensible to light, and he struggled violently when disturbed. He was then lying on his right side. An attempt was made to get him on his feet, but it was found, though he possessed his full muscular power, he could not, unassisted, maintain his equilibrium, and notwithstanding the fact that he was capable of sustaining the weight of his head when held in its normal position, if released it immediately turned to the right, until the nose came in contact with the shoulder, in which position it remained.

I diagnosed the case as concussion, in which the cerebellum was more particularly the seat of injury; and in view of the early return of consciousness, more or less, my prognosis was not altogether unfavourable.

The accident happened in the morning; by noon the case was evidently hopeless, and the animal gradually sank and died the same evening.

A *post-mortem* examination revealed a comminuted fracture of the sphenoid bone and basilar process of the occiput, without displacement.

Taking into consideration the surface where the accident occurred (a soft fresh tan track fully eighteen inches deep), I think the extent of the fracture, or even the occurrence of fracture, somewhat remarkable.

SYMMETRICAL PARALYSIS OF THE CRURAL MUSCLES.

BY KAY LEES, F.R.C.V.S., ARMY VETERINARY DEPARTMENT, NEWBRIDGE.

THIS case occurred at Peshawar during the month of July, just before the rains. The subject was a bay country-bred pony mare, about nine years old, the property of an officer in the garrison.

A violent hot wind was blowing from the Kyber hills, and the pony was picketed out (in the open) day and night, exposed to its full force, with the head in the windward direction.

The owner called on me early in the morning, stating that the pony was suffering from a "stroke of the wind," and that she had not been worked for a fortnight, as he had no use for her. Her feed had been half and half diet (half bran and half grain). The clothing consisted of one blanket folded into a square pad, and placed over the loins, a custom adopted for the prevention of paralysis, and to keep off the heat of the sun. On first looking at the animal, nothing was seen to attract attention, she was standing quietly, at ease, with the off hind limb flexed; the pulse, temperature, respirations, and excretions were normal, and there were no signs of pain. On attempting to lead her out, there was total inability to move forward, but she could move back with ease. On manipulation, the crural muscles of both sides showed signs of inflammation, with swelling, heat, and pain—so much so, that she would scarcely allow me to examine the parts affected. She endeavoured to get out of the way by backing, and tried to kick, the limbs being raised alternately, extended and dropped quickly, not being brought forward by the action of the crural muscles.

The treatment adopted was simple. Placed the patient in a sheltered position; fomentations and *cataplasma sinapis* to the regions affected; laxatives, etc.

In a few days the inflammation subsided, and with it a speedy recovery took place.

Editorial.

THE ANNUAL MEETING OF THE ROYAL COLLEGE OF VETERINARY SURGEONS.

THE annual meeting of the profession does not call for much remark this year. The members who last year caused the meeting to be somewhat of a noisy gathering were conspicuous by their absence, only one or two appearing to show that they were still in existence. The year's labours of the Council did not seem to afford much scope for fault-finding by those whose genius lies chiefly in that direction; there were no attacks by rowdy students upon the examiners, nor slanderous and unfounded utterances by their teachers, to dilate upon. The events of the twelve months have not been remarkable, except for the introduction of changes in the manner of examining students, which many of those whose opinions and experience entitle them to a hearing consider of a retrograde character, and likely to be detrimental to that professional progress which is so essential to our well-being. Much dissatisfaction had been felt, both at the meeting and in the Council, at the result of the dispute with the trustees of the Dick College, in regard to the disturbances attributed to the initiative of the students of that institution. There is a feeling that the honour of the Royal College has been overlooked in the desire to procure peace, and that the conduct of the Dick College trustees and their advisers should have been inquired into and exposed. The position of the Royal College in the matter was unassailable, and should have been maintained. It is felt in some quarters that it has been surrendered in order to spare the Scotch trustees, who do not appear to have acted with that sense and judgment which one would expect in persons placed in their responsible position. But perhaps the old motto may be accepted here, and that out of evil good may come. The disgraceful incident in Edinburgh is not likely to be repeated for some time, it is to be hoped; and it has certainly had the effect of impelling those who preside over the Clyde Street School to send its students before the examining board in a more creditable condition, mentally and physically. For this the trustees should be very grateful to our Corporation, and we hope they will acknowledge the service rendered.

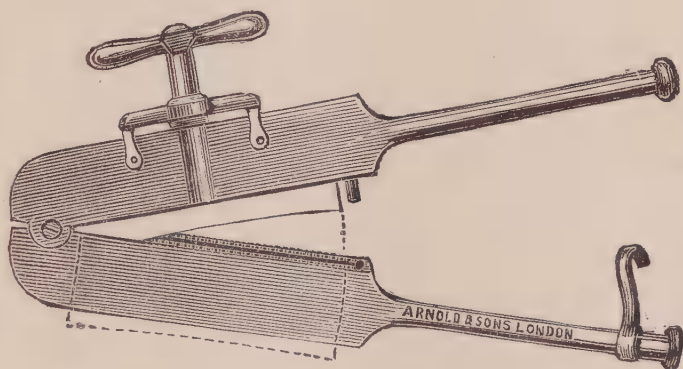
The annual dinner of the profession, held on the same day as the meeting, was a great success in every way. The large number of distinguished guests and visitors present gave it a lustre and tone which did much to encourage those who are striving for the elevation of veterinary medicine in this country to redouble their efforts, notwithstanding the grave obstacles they have to encounter in and out of the profession. The words of the illustrious duke, who may be said to have been the guest of the evening, were especially congratulatory and satisfactory. There are perhaps none who are in a better position than His Royal Highness to judge of the value of the services of veterinary

surgeons, for he has taken a particular interest in the work of the Army Veterinary Department of late years; and from his official position since he first joined the service—more than half a century ago—he has had constantly before him the progress that was being achieved. As no one is more careful and deliberate in expressing his views and opinions, we may accept his estimate of our profession as that of one entitled to the utmost confidence and respect, and who would not offer a word of praise if praise were not thoroughly deserved. The remarks of Lord Harris and Colonel Kingscote were equally encouraging, and are evidence that veterinary science never stood so high in this country as it now does.

The votes of the profession, in and out of Red Lion Square, prove that it is sound at heart, and resents the intrusion of those who would fain cause disunion and disturbance, in order to further their own personal ends or indulge their rancour and narrow-minded jealousy at the expense of the entire body. So long as the profession acts in this manner, its welfare and safety are assured.

NEW CASTRATING INSTRUMENT.

MR. JAMES WEBB, M.R.C.V.S., of Bishop's Stortford, wishes to call the attention of the veterinary profession to a new castrating instrument which he has invented, and calls by the name of "Emasculator." It has been manufactured and patented by Messrs. Arnold and Sons, of West Smithfield, London. An engraving of it is given below—



Mr. Webb has been a castrator for upwards of twenty years, and prefers this instrument to all others he has used—namely, clams, cautery, torsion, and ecraseur—as being the simplest, quickest, and most humane. It is light, and yet very strong, and is never likely to break, or even get out of order. It effectually prevents hæmorrhage from the spermatic artery, by severing it with its blunt and round-edged blade. Moreover, it is not expensive.

It consists of two flattened double halves of steel, connected at one end by a hinge or joint, while extending from the other end of each half is a rounded handle, which fastens them with a slide. Between each of these two double halves of steel is a narrow space, through which a rounded-edged blade passes, being propelled by a screw contained within a T handle, which is fixed at the upper border of one of the halves.

Mr. Webb further writes to say that he has received such a number of letters

from veterinary surgeons asking for particulars as to the manner of using the emasculator, that he gives the description in detail:—

After casting and securing the animal, which I hope to do without his sweating, I open the scrotum with the knife, and having opened the handles of the emasculator (the blade of which is already in the upper half of the instrument), I place it on the spermatic cord at a right angle, just above the epididymis, then nip the handles together and secure them *very tightly* with the slide, taking care not to include any portion of the skin of the scrotum within their grasp, and keeping the instrument close to the body, so as not to drag upon the cord in case the animal struggles. I now gently turn the handle of the blade-propeller until the blade has gone to its furthest extent; then turn the handle the reverse way until the blade is home again in the upper-half of the instrument; now push up the slide, open the handles, and carefully remove the testicle and cord from the instrument with the fingers. I then proceed in like manner with the other testicle, and liberate the animal, which, as a rule, is not down more than two or three minutes. When he rises, I prefer him remaining quite quiet for a few hours, and food be given to him. If the spermatic cord is thick, I sometimes screw the blade down and back again a second time, previously tightening the slide.

As the edge of the blade of the emasculator is rounded and quite blunt, its object being to stretch or squeeze the cord asunder, and not to cut it, it sometimes happens that a portion of membrane is not quite severed, if so, I close the handles again and break the membrane with my fingers, or cut it; then open the instrument again and remove the cord carefully from it with my fingers, if found attached.

When I first used the emasculator, I divided the cremaster and vas deferens with the knife, previous to placing the vascular portion of the cord in the instrument, but in one case hæmorrhage ensued. It was slow, but lasted several hours, I suppose from the artery of the cord being of unusual size. Since then I have generally included the whole of the cord in the emasculator. With large calves and bulls, I always sever the cremaster and vas deferens with the knife before applying the instrument. In young calves the knife above is sufficient. At present, I have not operated on anything above two years old with the emasculator, excepting one four-year-old pony; nor have I tried it upon rams; but should not hesitate to castrate horses at any age with it. I always cast animals for castration, but those who prefer doing it in the standing position will, I think, find the emasculator very handy.

The advantages I find in castrating with the emasculator are—the operation is so simple and quickly performed, especially after the operator has used it a few times. It evidently causes but little pain to the animal at the time, or afterwards. There is scarcely any hæmorrhage, which is not the case in my experience with the *écraseur*. No fire is needed, as when the cautery is employed. It is much quicker than the wooden clams or torsion. I never have occasion to visit, much less interfere with, a colt after castration; but am told by the owners in many cases that “they would hardly have known their colts had been castrated,” the swelling being so very slight. Of course, they are allowed plenty of room for exercise, either in a barn, yard, or meadow.

Precautions.—Never attempt to open or close the handles of the emasculator unless the blade is home in the upper-half of the instrument. Wipe the instrument immediately after operating; the blade can be screwed out when the handles are opened, and the grooves are easily cleaned by inserting the blade of a knife covered with a piece of rag, and rubbing it inside until dry. Then oil the blade and thread, and replace it in the instrument.

Messrs. Arnold and Sons are the sole manufacturers of the emasculator.

INOCULATION EXPERIMENTS AND THE CRUELTY TO
ANIMALS ACT OF 1876.

ON the 24th May, the Lord President of the Council, with whom were the Home Secretary, Mr. C. L. Peel, C.B., and Professor Brown, C.B., received an influential deputation from the Royal Agricultural Society of England and the Royal Veterinary College, to draw attention to the difficulties experienced by stockowners and veterinary surgeons with reference to the protective inoculation of animals of the farm against Anthrax and other contagious diseases, owing to the interpretation placed by the Home Office upon the Cruelty to Animals Act of 1876, and to urge upon the Government the introduction of a bill exempting veterinary surgeons from the provisions of this Act when there is a *bona-fide* intention of doing good to the animals and preventing suffering.

The Royal Agricultural Society was represented by Sir Matthew White Ridley, Bart., M.P. (President), Earl Cathcart, Lord Egerton of Tatton, Mr. Sanday, Mr. Jacob Wilson, and Mr. Ernest Clarke (Secretary); the Royal Veterinary College being represented by Colonel Kingscote, C.B. (Chairman of the Governors), the Right Hon. E. Marjoribanks, M.P., and Mr. R. B. Berens.

SIR MATTHEW RIDLEY, in introducing the deputation, said they had come before the Lord President in consequence of the interpretation which had been placed by the Home Office upon the Cruelty to Animals Act. They did not dispute the legality of such interpretation, but there was a real practical difficulty which was standing in the way of ordinary operations upon domestic animals of the farm, because it appeared that unless there was absolute certainty about the effect of an operation, it was illegal. Lord Egerton would explain the difficulty in detail, and would state what had happened in the case of his own herds.

LORD EGERTON OF TATTON said he wished to lay before the Lord President certain facts with regard to the practical operation of the Vivisection Act, as it affected agriculturists at the present time. Their herds were very liable to attacks of Quarter-ill, Anthrax, and Swine Fever. In the case of all those diseases, they believed that by inoculation the diseases could be, to a very great extent, prevented. In having his own herd inoculated, he had no intention of infringing the Vivisection Act. He understood the Act applied to laboratory experiments, and he had put to himself this question, What was an experiment? when did an operation cease to be an *experimentum in corpore vili*? When he, believing that inoculation for Quarter-ill would be efficacious, submitted to it fifty-six of his young stock, it was certainly not ~~an~~ an experiment in the Parliamentary sense of the word, but with a belief that it would be efficacious. Inoculation had not before been tried on so large a scale, and he, being then President of the Royal Agricultural Society, had these operations carried out in order that agriculturists might see whether these so-called "experiments" were successful or not. If he had thought that all these animals would have died, he would never have submitted them to Professor Penberthy. Professor Penberthy had to be summoned at a moment's notice, because it was necessary that an animal should be inoculated with fresh virus. If inoculation became general, local veterinary surgeons would perform the operation; but, in the first instance, it was necessary that these experiments should be carried out with the best advice and by the most scientific men. He had previously heard that these experiments had been carried out at Major Percy's farm at Hodnet, and he believed the experiments on his own farm would be as successful. Four animals died very shortly afterwards, probably on account of some want of skill on the part of the operator, or because he did not have sufficient veterinary assistance. The remainder so inoculated had been protected from Quarter-ill ever since, whilst,

in November last, to his very great loss, two valuable calves died from the disease, which were not old enough to be operated upon when the rest of the herd was inoculated. All the other animals up to the present time had been free from the disease, and it was very desirable that these experiments should be carried out on a large scale. Unless he had been stopped by the Home Secretary he should naturally have tried again what was popularly called an "experiment," but which, in his case, was simply a veterinary operation.

Lord Egerton then detailed the circumstances in relation to the action taken by the Home Office in the case of Professor Penberthy, which were as follows:—"On October 6th, 1887, Professor Penberthy received from the Home Office a letter drawing attention to an abstract of the report published by the Royal Agricultural Society, 'from which it would appear that certain experiments such as could not be performed without a licence from the Secretary of State under the Act 39 and 40 Vic., cap. 77, were performed by you. As no such licence has been granted you, the Home Secretary desires to know if you have any explanation to make in the matter.' Professor Penberthy replied asking for a personal interview. This request was refused, and he wrote saying he was assisting Professor Robertson, who held a licence for the purpose. On November 16th, he received a letter from the Home Office, stating that 'the Home Secretary was satisfied that many, if not all of the operations performed by you, which have been called in question, were performed contrary to the law, and that you rendered yourself liable to criminal proceedings. Neither the plea that you were acting as Professor Robertson's assistant, nor the plea that the operations were not experiments to which the Act applies, can be entertained. But for the lapse of time which has taken place, the Secretary of State would have directed a prosecution, and you must strictly understand that, in case of any further neglect to conform with the law, you will be immediately prosecuted.'"

It was in consequence of the action of the Home Office that Sir Matthew Ridley and himself had had an interview with the Home Secretary, and he (Lord Egerton) wrote to the Home Office a letter, to which he received the following reply:—"The distinction has hitherto been drawn and upheld in dealing with inoculations and the application of the Cruelty to Animals Act, 1876, that if the inoculations are performed with a *bona-fide* belief in their efficiency in order to produce a practical result, viz., the prevention of disease in a particular case—they constitute simple veterinary operations, but if performed with a view to test or verify a theory, they constitute experiments under the Act, for the legal performance of which a licence is necessary."

This interpretation implied a personal belief by the operator that the operation was going to be successful. Professor Brown had remarked that there were other veterinary operations which were of doubtful efficacy, such as rowelling and firing. If the Home Secretary's argument applied to the latter, no horse could be fired. Many veterinary surgeons did not "believe" in its efficacy, and therefore firing should be stopped. If the law was as it had been interpreted, they thought that there should be some alteration in the Act which would enable these operations—which they believed were absolutely necessary for the protection of animals from disease—to be carried out in the field, either by an ordinary practitioner, or by any one coming from London; and this not only in order that veterinary science might be extended, but that the animals might be kept alive. During the ensuing summer hundreds of animals would die from Quarter-ill, and owners of stock would be prevented from adopting the remedy of inoculation, unless the law were amended. They did not desire any relaxation of the law as regarded the abuse of vivisection, or in any way to diminish the restrictions which at present exist in regard to the performance of experiments in a laboratory or upon inferior animals.

Inoculation experiments were just as *bona fide* as the firing of an animal, although they might not in the first instance have been tried so long as that there could be actually said to be a certainty of success. The operations were as likely to succeed as were many other operations which were performed by veterinary practitioners. They believed that if the law stood as at present, it would be perfectly impossible for any improvement in veterinary science to take place. They contended that it should be made clear that stockowners could on their own responsibility be allowed to carry out these experiments. The law had been strained in a way which he believed it was never intended to be. He (Lord Egerton) certainly never for a moment imagined that this would be the effect of the Act, or that it would be applied in such a way. The case of Swine Fever was one with which he was not personally acquainted, but Professor Brown had been endeavouring to carry out experiments which he believed would relieve us from this dreadful curse. The county rates were burdened with enormous sums for the slaughter of animals, and they were most anxious that something should be done if possible; but the law, as it was at present, stood in the way of any improvement.

The Royal Agricultural Society wished that this matter should be cleared up, and that operations of this kind, performed at the risk of the owner, should not be classed as experiments within the meaning of the penal clauses of the Act. He spoke as one largely interested in agricultural operations, and as knowing the feeling of agriculturists throughout the country. He did not wish to break the law or to go to law, but to have the law altered.

The LORD PRESIDENT said he had not looked into the legal aspect of the case, but he understood that in the case referred to by Lord Egerton, the principal object had been the safety of the animals.

LORD EGERTON said that was so, but Professor Penberthy's action had been arrested by the Home Office, and owing to the state of the law no veterinary surgeon would perform these experiments for fear of the legal consequences.

Professor BROWN said that from a scientific point of view he quite sympathised with the object of the Deputation. Scientists were generally agreed that the Home Secretary was right in his interpretation that whatever was done for the purpose of testing anything was really an "experiment." When he (Professor Brown) had got to a certain stage in the laboratory with reference to Swine Fever, he thought that injection of a particular fluid into the skin of a pig would most probably prevent Swine Fever. He had written to the Home Secretary to know whether such experiments could be carried out by veterinary surgeons without a licence, and had been answered in the negative.

His contention was that in the inoculation experiments such as had been described, the operator proceeded, not with a *bona-fide* belief (he had not it himself), but with a *bona fide* intention to benefit the particular animals upon which he operated. Whenever the proceedings were for the cure of disease or protection of the animal, they could not strictly be called an "experiment" in vivisection. At the same time he felt perfectly justified in stating his conviction that such experiments were within the meaning of the Act as it now stood, and he would not think of performing them unless he had legal authority for doing so.

He thought they would meet with general agreement that veterinary surgeons should be put in the same position as medical practitioners, who inject new medicines under the skin of their patients to see whether they would cure or not; but if a veterinary surgeon heard of a new medicine, and wished to try whether it would be useful to the animal kingdom, he could only proceed by a licence from the Secretary of State. He thought that the matter should be considered in that light, and that veterinary surgeons and medical men should be placed in exactly the same category—in other words,

that the experiments named in the first section of the Act of 1876 should not apply to practitioners when they proceeded in the ordinary course of their profession and when they had a *bona-fide* intention of benefiting the animal upon which they operated.

The HOME SECRETARY said the difficulty all arose from the use of the word "experiments." The Act did not define the word "experiment," and he therefore tried to put a rational meaning upon it. What he endeavoured to convey in his letter to Lord Egerton was the distinction between the word "experiment" and the word "treatment." In the case referred to he had based his action upon a report, from the perusal of which he collected that the operations fell not within the class of treatment, but of experiments—*i.e.*, endeavouring to find out what a particular experiment would result in. Professor Brown had agreed that the word "experiment" must at least go as far as he (Mr. Matthews) had indicated—that there must be a belief that the operation would produce a cure, in which case it would become treatment. But if there was a *bona-fide* desire to benefit the animal, without any belief or knowledge one way or the other, he thought that ought to take the operation out of the class of experiments. This was, perhaps, a very refined and delicate distinction, and he confessed there was a little difficulty in dealing with it. In considering the particular operations mentioned by Lord Egerton, some did not appear as experiments, but were treatment; but some of the operations (the earlier ones) were clearly experiments, and performed avowedly as experiments, though under colour of a licence.

LORD EGERTON pointed out that no veterinary surgeon, after what had occurred, would run the risk of incurring a penalty of £50. They wanted the law changed, as it was evidently not clear. What they asked the Government to do was to make such an alteration in the law as *would* make the matter clear.

Colonel KINGSCOTE said that their object in coming there was to get the nice distinction in the present Act of Parliament altered. As agriculturists they wanted, if possible, to have their flocks and herds treated so that they might be freed from disease.

The LORD PRESIDENT thought it was to be regretted that there had not been an attempt to get a legal decision on the point in a Court of Law. Personally he might express the opinion that where a man, with a reasonable chance of success from knowledge which he had acquired in his profession, treated an animal with a view of saving its health, he was doing that which primarily must be inoffensive, and in accordance with the fair exercise of his profession. He did not believe that any Court would hold that there was anything in the meaning of the Act to prevent the operator doing this. Where a man was still groping in the dark, his operations were experiments; but where there was a reasonable amount of unanimity in the profession about the means of cure, then he thought no Court would class such operations as "experiments" within the meaning of the Act. All he could promise was that his Department would give the matter careful consideration, and see if any way out of the difficulty could be found. No decision upon the Act had yet been made, and it was very difficult to bring forward new legislation without some positive decision of the Courts that such legislation was necessary.

Sir MATTHEW RIDLEY having thanked his Lordship for his courtesy, the deputation then withdrew.

CAPRINE AND OVINE VARIOLA.

THE contention that each species of animal has its own form of Variola, which manifests itself in never-changing features under all circumstances, and does not undergo transformation—as opposed to the notion that one

kind of Variola (human Small-pox) will become for ever converted into another (Cow-pox)—receives further support from the note published by M. Bremond in the *Journal de Med. Vétérinaire et de Zootechnie*. MM. Miquet and Jausseaume have observed outbreaks of Variola among flocks of goats in Algeria, and at the same time flocks of sheep grazing along with them remaining absolutely free from the disease. These two veterinary surgeons have inoculated sheep and goats with matter from the pustules of a sick goat; but the result has been negative, so far as the sheep were concerned, though, with the goats after the third day there were magnificent flocks.

M. Bremond himself introduced among fifteen sheep severely affected with Sheep-pox, nine goats, young and old, male and female. After the closest cohabitation for sixteen days, all the goats remained unaffected, not the faintest trace of Variola having been detected among them. Some days afterwards, with the contents of some very fine variolic pustules from a sheep, he inoculated three of these goats, as well as five Spanish goats just arrived from Spain, and which therefore had not been in contact with the flock of sheep. But here, again, the result was completely negative.

On these grounds Bremond comes to the conclusion that Goat-pox and Sheep-pox are two quite distinct morbid entities. On the Algerian pastures sheep and goats graze and live together, and when the former are affected with Variola no precautions are taken with regard to the latter, and *vice versa*.

That the disease cannot be transmitted at all from one to the other species is perhaps too absolute a conclusion to arrive at, however; for in the *Revue Vétérinaire* for 1883, Professor Peuch states that he had successfully inoculated Sheep-pox in a goat, though certainly the consequences were remarkably benignant. And similar experiments had been previously made by Hering and Hertwig, Kercten and Gerlach, with the result that the malady could be readily conveyed from sheep to goats, producing in these a real Variola which could be re-transmitted to sheep. In the goats the pustules were smaller and the general malaise much less. Contagion by cohabitation was difficult, and it was often noticed that goats could live among sheep during a severe outbreak of Variola without been involved. Hering, nevertheless, has had fifty-four goats placed in such circumstances, and ten took the malady.

THE BROWN INSTITUTION.

THOSE who are sceptical regarding the work done at the Brown Institution, observes the *Lancet*, should read the report for 1887 compiled by the Professor Superintendent, Mr. Victor Horsley. It will be seen that the benevolent wishes of the founder are faithfully observed, and that, as hitherto, many important scientific investigations have been carried on. To some who, as Professor Horsley says, spend money in "wanton and mendacious abuse of the Institution and its work," it may be a revelation that no fewer than 3,850 "patients" were treated therein during the past year. Perhaps the misconception of the work of the Institution prevalent in some quarters has been partly owing to the reticence hitherto kept regarding its hospital side. Now, thanks to a resolution moved by Sir W. Gull, further details respecting the hospital work are to be given in the annual reports. Professor Horsley points out that the hospital records are incomplete owing to the fact that a large number of cases are only brought once to the Institution, and also because there is no clinical clerk appointed to keep the records. He appeals for help to the public to support this benevolent enterprise, and we cannot but feel the force of his suggestion that this would be a far more

worthy channel for donations than the cause of "anti-vivisection," which has never ceased to impugn the work of the Institution. It is noteworthy that during 1887 only one case of Rabies was treated, and, notwithstanding that, more dogs were admitted than usual. This scarcity of Rabies is attributed by Professor Horsley to the operation during the previous year of the police restrictions as regards muzzling and the destruction of stray dogs. He emphasises the value of these restrictions by reference to the fact that whilst they were in force that highly contagious malady "Distemper" was also much diminished; but that, since the restrictions have been removed, a great increase in cases of Distemper appears in the hospital records, the short incubation period of that disease accounting perhaps for its reappearance at an earlier period than that of Rabies. He also alludes to the regrettable fact that the results of surgical operations are far less favourable than they would be if the hospital were provided with the means necessary for carrying them out on the strict antiseptic principles essential to success. Mr. Batt, the veterinary surgeon, furnishes statistical tables of the number and kind of cases treated during the year. From these we learn that 2,116 horses, 1,023 dogs, 272 cats, were treated as patients; that the total number of in-patients admitted amounted to 242, of whom 186 were discharged cured or relieved. A large variety of diseases and injuries were dealt with, including 162 cases of Distemper, 9 of Glanders and Farcy, 121 of Tubercle, 29 of Chorea, 13 of Epilepsy, 5 of Tetanus, 118 of Croup, etc. The importance of the Brown Institution as a pathological laboratory could not be better shown than in the record of the researches carried on there during the past year. Seldom have so many taken advantage of the opportunities afforded by the Institution for the prosecution of inquiries that have a direct bearing upon medical science. The scientific work pursued under the direction of Dr. Klein on behalf of the Medical Department of the Local Government Board is carried on here, and Professor Horsley recapitulates the investigations of Dr. Klein, Mr. Lingard, Dr. W. R. Smith, and Dr. Wooldridge, which include the memorable inquiry into Scarlatina and other subjects already reported. Besides these Governmental researches, many subjects of considerable interest have been investigated. That of Rabies demands chief notice. Professor Horsley has conducted an extensive inquiry upon this disease, in which he substantiated the results obtained by M. Pasteur. This confirmation was announced last year in the report of the English Commission, but a full account is proposed to be presented to the Pathological Society. The outbreak of Rabies among deer in Richmond Park during 1886-7 was investigated by Professor Horsley: first in the inoculation of rabbits with portions of the medulla from two of the affected animals, whereby the diagnosis of Rabies was fully confirmed; and then by the observation of four affected animals sent to the Institution from the park. They exhibited the characteristic symptoms of furious Rabies, and, as usual in that form, the fatal issue was preceded by progressive Paralysis, beginning in the hind limbs. Professor Horsley says that "there is no doubt that this serious outbreak was a simple consequence of the height to which the disease has been allowed to rise before the present legislation, commencing at the end of 1885, produced its effect in 1886." The value of M. Pasteur's method in the diagnosis of Rabies is shown in a table supplied by Professor Horsley of twenty-three cases, in eighteen of which the diagnosis was confirmed by the employment of this method—that, namely, of subdural inoculation. It is to be regretted that, owing to our restrictive legislation, this test is not available by the veterinary surgeon in his daily practice. The subject of Rabies has also been investigated experimentally by Mr. Dowdeswell, who, besides confirming M. Pasteur's statements, found that in an infected animal the tissues do not become virulent till towards the close of the inoculation period, and that none

of the numerous drugs tried on the rabbit had any constant effect on the result of infection. The report contains mention of several experimental inquiries into the pathology and physiology of the nervous centres. Mr. Ballance and Dr. Hadden have been engaged in experiments on the motor area of the cortex of monkeys. Professor Horsley and Dr. Beavor, in continuation of researches commenced in 1885, "with the view of elucidating some of the phenomena of Epilepsy and Paralysis," have pursued three lines of inquiry. The one is into the localisation of motor function in that portion of the spinal cord which gives origin to the nerves forming the brachial plexus. This is still in progress, and publication of results is deferred until certain points of minor importance that have been observed can be fully explained. They have continued to analyse minutely the representation of movements in the so-called motor region of the cortex, studying during 1887 the part around the upper limb area above and in front, and the results obtained will doubtless go far to clear up the order of phenomena of the Epileptic fit. A third line of experimental investigation undertaken by these gentlemen was to trace the arrangement of fibres in the internal capsule by means of faradisation of parts one millimetre apart. So far as they have gone, they have no doubt that the fibres are arranged in the same relative order and position as the centres projected on the cortex cerebri of the same hemisphere. Dr. Mott is engaged in investigating by experiment certain obscure diseases of the spinal cord, and has already shown the course taken by ascending degeneration after limited destruction of the roots of the cauda equina. Remarkable osseous trophic lesions followed in the leg of a case where the anterior nerve roots had been divided. Of other inquiries carried on at the Brown Institution, some are already known to the profession, others will shortly be brought before notice, and others are still in progress. They include the investigation respecting Micro-organisms in Healthy Tissues, by Mr. Ballance and Mr. Shattock, that on the Ligature of Arteries, by Mr. Ballance and Dr. Edmunds, and one on the Infectivity of Tetanus, by Mr. Ballance and Mr. Lingard; an Inquiry into the Treatment of Tubercular Disease of Joints, by Mr. Watson Cheyne; one into Paralysis of the Recurrent Laryngeal Nerve, by Dr. Clarke; an investigation upon Puerperal Fever, by Dr. W. R. Smith; Dr. Wooldridge's experimental production of Hæmorrhagic Infarction of the Liver; and further research into Epilepsy and Myxœdema, by Professor Horsley. No one will venture to deny that the Brown Institution is an active centre of scientific work, or that the subjects there dealt with are worthy of the attention bestowed upon them.

Proceedings of Veterinary Medical Societies, &c.

ROYAL COLLEGE OF VETERINARY SURGEONS,

FORTY-FIFTH ANNUAL GENERAL MEETING.

HELD AT RED LION SQUARE, MONDAY, MAY 7TH, 1888.

Sir HENRY SIMPSON, the President, in the Chair.

Present:—Nicholson Almond, George A. Banham, J. D. Barford, Thomas Barker, A. W. Barnes, T. G. Batt, W. G. Boswell, Thomas Briggs, James Broad, James Hall Brown, sen., G. T. Brown, C.B., J. McCall, B. Cartledge, John J. Cheeseman, F. P. Collings, J. Roalfe Cox, C. Dayus, John A. W. Dollar, Thomas A. Dollar, William W. Dollar, Edward Coleman Dray, W. Duguid, John Evans, J. Fraser, Sir F. W. Fitzwygram, Dr. G. Fleming, C.B., J. Gibbs, H. D. Gibbings, G. H. Golding, Thomas Greaves, William John Hatton, Woodroffe Hill, S. G. Holmans, H. W. Hooper, Tedbar Hopkin, William Hunting, George Hurford, J. Sutcliffe Hurndall, A. Jacobs, John C. James, H. Kidd, T. A. Killick, A.V.D., James Lambert, A.V.D., Arthur Leather, Clement Lowe,

J. Irvine Lupton, J. Mackinder, W. A. Morgan, A.V.D., W. J. Mulvey, Frank T. Oatway, Harry Olver, C. Phillips, A.V.D., William Pritchard, George Reddish, W. Reekie, James Reilly, A.V.D., Alex. E. Richardson, A.V.D., H. G. Rogers, William Roots, Charles Rose, James Rowe, Captain Benjamin H. Russell, F. G. Samson, E. S. Shave, William Shipley, sen., J. F. Simpson, H. M. Singleton, Sydney H. Slocock, H. W. Stevens, J. H. H. Stidson, Robert C. Trigger, F. Walker, W. B. Walters, Richard Whitwell, A. C. Wild, William Wilson, W. T. Wilson, J. Woodger, J. A. Woods, W. Woods, F. W. Wragg, G. Thatcher (Solicitor, *ex-officio*), and A. W. Hill (Secretary).

The SECRETARY read the notice convening the meeting.

The CHAIRMAN declared Dr. Fleming, who had received 910 votes, Mr. Greaves, who had received 764, Professor Williams, who had received 741, Professor Pritchard, who had received 709, Mr. J. F. Simpson, who had received 679, Professor Brown, who had received 549, and Professor McCall, who had received 518, duly elected to the Council.

The CHAIRMAN drew lots to fill the place of Professor Robertson, and declared that Professor Pritchard would take the place of Professor Robertson.

Mr. JAMES SIMPSON moved, "That the minutes of the last general meeting be taken as read."

Mr. CARTLEDGE seconded the motion.

The motion was carried.

Mr. DRAY moved, "That the annual report be taken as read."

Dr. FLEMING seconded the motion.

The motion was carried.

The CHAIRMAN, in moving the adoption of the report, said sections 5, 6, and 7 related to the bye-laws and the rules of examination; they gave the names of the new Examining Board, and stated the number of students who had been up for examination. The new bye-laws had been made and the Examining Board appointed by a Council which consisted of Examiners, of teachers, and general practitioners. They had had a very harmonious time in arranging the new order of things, and he hoped and believed that a very happy state of things reigned in the profession generally. By the death of Professor Robertson the profession had lost a very valuable man—one who lived for the profession, and one whose loss would be sincerely regretted. The Council had taken every step they could to show honour and respect to his memory. There was a suggestion that the College should be declared out of debt. Roughly speaking, the College had cost £6,000, and considering that about £4,500 had been raised by members and from legacies, he thought it very desirable that the College should pay off the remaining £1,500 and be declared out of debt.

Dr. FLEMING seconded the motion for the adoption of the report.

Mr. DOLLAR said the Council had had a very heavy task in the year which has just passed, because in addition to the ordinary business of the profession they had to appoint a new Examining Board, and to entirely revolutionise the system of examination, and he congratulated the President on the manner he had conducted the business of the Council. Discontent raged so high last year that a split in the profession seemed imminent. Many members felt strongly that no member of the Council ought to be allowed to be an Examiner. That subject had not been taken into the consideration of the Council as it deserved. The Council ought to have complete control of the Board of Examiners, but that was impossible so long as seven or eight Councilmen were Examiners. It was altogether against human nature to find fault with what one did one's self, and that was and must be the position of the Council so long as members of it maintained their seats in the Council and acted as Examiners. He proposed, "That in the opinion of the members of the profession here present it is wrong in principle for a member of Council to act as an Examiner."

Mr. HURNDALL had much pleasure in seconding Mr. Dollar's motion. There was a very strong feeling amongst those with whom he had had any conversation upon the matter that those who occupied positions on the Council voted for themselves to become Examiners, and thus the Examining Board was confined to a small circle. He thought it was a very lamentable state of affairs if, out of a body of something like 2,800 or 3,000 members, there were only between sixteen and twenty men competent to undertake the work of Examiners. He thought it was the wish of the profession that those who constituted the Council should not have the opportunity of being members of the Examining Board. If one member of the Council voted for another, they could not complain of each other.

Mr. BRIGGS said that Mr. Banham, who was known as an examiner, had received 445 votes. How did Mr. Hurndall account for that?

Mr. HURNDALL said that 445 was a very small proportion of 2,800 or 2,900, and it might be that a great number of those gentlemen who had voted for Mr. Banham had not taken the matter into account.

Mr. WILLIAM HUNTING said that the College Library ought to be improved. He had been interesting himself on the subject of hereditary diseases, and having five minutes to spare he turned over a book labelled "Pamphlets," and in it he found, bound up with a lot of others, a pamphlet by Professor Law, which was the best article he had ever come across on the subject. The number of votes which had been given and the number of circulars which had been sent out showed that greater interest was being taken in the election of members of Council. He would propose that for the future in the voting-papers sent out, the names of proposed members of Council should be arranged alphabetically. The greatest alteration that had been made by the Council had been in reference to the Final examination. Formerly, if a man were rejected either in his Oral or his Practical examination, he had to go back again, and go through the two. Now, if a man passed his Oral examination, he could go to his Practical, and if rejected at his Practical he could go to a practitioner and learn it, and the next time he went up he need not go for the Oral.

Mr. KIDD held that no members of the Examining Board should have a seat on the Council. That, however, did not so much depend on the Council as on the profession, who had the power of election. Members ought to have a circular from every candidate stating what he would do and what he did not intend to do. Clause XI drew attention to the "Veterinary Surgeons Act." The original charter gave members of the College the sole right to the title of veterinary surgeon. The Council who had to do with that Act going through Parliament let that title slip, or at least divided it between members of the College and those who had no right to it; and that had done the members an immense amount of harm. Clause XVI drew attention to the *Annual Register*. At the last meeting the Council gave a distinct promise that the disgraceful proceedings at Edinburgh should be investigated and a report presented to that meeting. There was nothing about it. He did not think anything had been done. He begged to move, "That the Report be not adopted, and that a committee be appointed to investigate this matter."

Mr. LUPTON agreed with Mr. Dollar that members of the Council should not be elected Examiners. He did not think any professor or teacher ought to be an Examiner. If they had control of the schools they would have control of the teachers at that school. During the past twenty years the veterinary profession had made very much progress socially, educationally, and in every other way. Lately a member of the profession had been knighted, and two members had been made C.B.'s. Honours had been conferred upon the profession, as well as upon the members themselves.

Mr. LEATHER suggested that members should announce any change in their address.

Mr. WOODROFFE HILL asked two questions as to Clause XVII. He resided at Hastings, where there was a "Local Guide." published. One of the first things he saw was the name of a man who put opposite his name M.R.C.V.S. He called upon the conductor of that directory, and the man was now called a "veterinary attendant" only. Was the conductor of that guide responsible, or was the man who gave his address responsible? The other question was whether blacksmiths had any right to the word "veterinary" in connection with their forges? Was a man who was not a member of the College, but who had a son who was (although that son was a Roman Catholic priest and had never practised as a veterinary surgeon), justified in using the term "veterinary"?

Mr. MACKINDER said that no man ought to be allowed to advertise himself as being registered by the Royal College of Veterinary Surgeons, unless he was a member of the College.

Mr. HURFORD said that in the town in which he practised a man exposed a brass plate inscribed "W. Finch and Co., Veterinary Surgeons; established 1687. Upon writing the Secretary the brass plate had been removed, but was replaced by one inscribed "W. Finch and Co., Veterinary Attendant." He succeeded in getting Mr. Finch out of his neighbourhood, and he supposed the man went and practised his fraud elsewhere.

Mr. TRIGGER, though strongly in favour of members of the Council not being eligible for election as Examiners, did not think the time was ripe for legislation on the subject.

Mr. BANHAM proposed that the number of committees each gentleman was on should be published with the number of attendances, so that members could make out how many committees each gentleman had attended and the work he had done. Whilst he did not think any member of Council should vote for his own election as Examiner, he could not understand why the profession should not select an Examiner to sit on the Council if they chose. The matter was in the hands of the profession.

Mr. MACKINDER urged that some steps should be taken by the Council to secure for the members of the veterinary profession exemption from the horse tax.

The CHAIRMAN said at present they had no law which said that a teacher should not be an Examiner, and the tendency of the age was against making restrictions which would bar qualified people from taking any appointment. He was sure the Library Committee would take note of Mr. Hunting's remarks. Something had been said about prosecuting men (who were not members of the College) outside whose houses was a brass plate inscribed "Veterinary Surgeon." Whilst the Council was desirous to give the profession the full benefit of the "Veterinary Surgeons Act," he desired to say that other proof than the putting up of a signboard must be had before the Council could prosecute. A brass plate was no proof that the man lived there, and no proof that he practised veterinary surgery. Unless further evidence was brought before a magistrate they could not get a conviction; and if they did not do that the matter would be best left alone. No man was entitled to use the name of veterinary unless he was a member of the College, or a registered practitioner. Formerly any man could call himself a veterinary; he could not now. With regard to Mr. Leather's remarks as to the Register, he must point out that to a great extent the accuracy of the Register depended on the members themselves. The Council paid 2s. 7d. to every registrar of births, deaths, and marriages who sent a certificate to the College; and he hoped every veterinary surgeon who knew of the death of a veterinary surgeon in his district would send a notification of it to the

Secretary. A registered practitioner who called himself a M.R.C.V.S. would be prosecuted if it were brought to the knowledge of the College. No person other than a member of the College or registered practitioner was entitled to use the word "veterinary" in any sense or form. In several cases where this had been pointed out persons using it had removed it from their sign-boards, etc.; but if the College found a man who was defiant, and said "I shall challenge you," it would get up a good case and fight it. With regard to the case to which Mr. Hurford had referred, if Mr. Hurford would put it into writing the opinion of the solicitor should be taken on the point. In all the alterations which the Council had made they had endeavoured to meet the students, so that there should be no hardship, and if there was a case of hardship the Council would deal with the matter in a spirit of equity. The matter of exemption from the horse tax was being well looked after by Sir Frederick Fitzwygram, who had taken the greatest interest in it, independently of the College. He (the Chairman) had sought an interview with the Chancellor of the Exchequer. He had seen the Chancellor of the Exchequer's private secretary, and had emphasised the point by saying that veterinary surgeons were medical men in every sense of the word. The secretary had assured him that the matter was having the very best consideration of the Government. Another representation had been made by the Veterinary Department of the Privy Council through Professor Brown. So if the College failed to get exemption for the profession it would not be for want of trying. With regard to the paying off of the debt, he was glad to find that the members thought the Council had really done the right thing. As to the Edinburgh students, certain alterations had been made in the rules, and the Lord Provost (the head of the governing body of the school) had written to say he was very pleased to hear that new rules had been made, and he hoped and trusted they would be for the benefit of the profession as a whole. His (the Chairman's) impression was that the College was firmer than it ever was. The fact that Dr. Fleming had received nearly a thousand votes showed that the profession had a keen interest in what was going on; and considering that Dr. Fleming, who headed the poll, was an Examiner, he (the Chairman) hoped the meeting would not pass an amendment which would disqualify a member of Council to act as Examiner.

The amendment of Mr. Dollar, "That in the opinion of the members of the profession here present it is wrong in principle for a member of the Council to be an Examiner," was then put, and seven members voted for it.

The contrary was carried by a large majority.

The adoption of the report was carried unanimously.

A MEMBER moved, "That the next annual meeting be held in Glasgow."

The CHAIRMAN ruled that out of order. The charter gave no power to go to Glasgow, but they might go to Edinburgh or Dublin.

A MEMBER moved, "That a recommendation be made to the Council that the next annual meeting be held at Edinburgh."

A MEMBER seconded this motion.

A MEMBER moved, "That a recommendation be made to the Council that the next annual meeting be held at Dublin."

A MEMBER seconded the motion.

Both recommendations were put to the vote, and lost.

A vote of thanks was accorded to the Chairman, who returned thanks, and a similar vote to the members of Council was acknowledged by Dr. Fleming.

SPECIAL MEETING OF COUNCIL, HELD MAY 7TH, 1888.

Sir HENRY SIMPSON, the President, in the chair.

Present:—Professors G. T. Brown, C.B., J. McCall, W. Duguid, W. Pritchard; Dr. G. Fleming, C.B.; Gen. Sir Frederick Fitzwygram, M.P.; Messrs. J. D.

Barford, T. Briggs, J. B. Cartledge, J. Roalfe Cox, E. C. Dray, T. Greaves, W. G. Mulvey, J. F. Simpson, W. Woods, F. W. Wragg, and the Secretary.

The PRESIDENT said he had invited the Council to meet him in consequence of Professor Pritchard, Mr. Wragg, and Mr. Cox having thought it necessary to protest against the order in which the names of candidates for election to the Council appeared on the voting papers, and he wished to explain the course he had adopted. He found there was now nothing in the bye-laws and no instructions in the charters on this matter, and he had directed the Secretary to place the names according to seniority in the Council—*i.e.*, vice-presidents in the order they were elected last year, and members of Council in the order they were received at their last election, and following these, candidates who were neither vice-presidents or members of Council in the order their nominations were received. He had taken an opportunity of explaining this to the gentlemen who protested, and learned from them they did not regard the President's instructions as illegal, but contrary to custom, which they asserted was that names should be placed in the order in which the nominations were received at the College. He (the President) had pointed out that a bye-law which made it compulsory for candidates to be nominated in Council (when of course names would be taken down in the order of nomination) had been abolished, and therefore he was left with full responsibility, and he had thought right to adopt the principle of seniority. He thought with this explanation the protest might be withdrawn, and he invited the gentlemen named to withdraw, assuring them the matter has caused no ill feeling so far as he was concerned.

Mr. Cox said there was an impression that many were inclined to vote for those whose names appeared first on the list. He considered the order in which the nominations were received by the Secretary was the order they should stand on the voting paper, and that the Secretary should prepare the list without reference to the President.

Mr. WRAGG said he protested principally because he understood the names would appear in the order they were read out by the Secretary, and he had asked the Secretary if such would be the case, and had been answered in the affirmative. He intended to give notice to add to Bye-law 4 the following words:—"The names of candidates shall appear on the voting paper in alphabetical order."

The PRESIDENT saw no objection to such a rule, but in the absence of any rule why protest against what had been done? Under Mr. Cox's presidency the names did not appear in the order they were read out by the Secretary, and last year candidates who were not members of Council were placed at the bottom of the list. Where, then, was their custom? For his part he did not believe it mattered where a man's name was; no one voted without knowing fully whom he meant to support. He considered that members of Council would do wisely to abstain from interference with nomination papers after they had been delivered to the Secretary.

Dr. FLEMING did not think the subject demanded very serious attention, and it never struck him that a man's position on the list had anything to do with the result of the election. It would not influence his judgment. He approved of Mr. Wragg's suggested alteration to the bye-law, and appealed to the gentlemen to withdraw their protest.

Professor BROWN felt with Dr. Fleming that, although it was right to bring the matter before the Council, it was not a fundamental question.

Mr. BRIGGS thought the names ought to have appeared in the order they were read out at the Council meeting.

General Sir FREDERICK FITZWYGRAM moved, "That the Council, after full consideration, is of opinion that Messrs. Pritchard, Cox, and Wragg acted on

bonâ fide grounds; it is perfectly satisfied that the President also acted on *bonâ fide* grounds, and to the best of his judgment; and this meeting is of opinion that an alteration of the bye-law, as proposed by Mr. Wragg, should be brought before the Council."

Professor McCALL seconded the motion.

On being put to the meeting, the motion of Sir Frederick Fitzwygram was carried unanimously.

Mr. WRAGG gave notice of an alteration to Bye-law 4.

THE ANNUAL DINNER

was held at the Freemasons' Tavern on the same day, Sir Henry Simpson presiding. Among those present were H.R.H. the Duke of Cambridge (who sat upon the Chairman's right), the Earl of Airlie, Lord Harris, Lord Arthur Somerset, Sir George Russell, M.P., General Sir F. Fitzwygram, M.P., Colonel the Hon. R. Talbot, Major-General Ravenhill, Professor Brown, Professor Axe, Colonel the Hon. W. Carington, Colonel Nigel Kingscote, C.B., Colonel Townsend, Lieut.-Colonel Burn, Captain Fergusson, Dr. Fleming, C.B., the Mayor of Windsor, and Messrs. Jacob Wilson, Lambert, Barnard Holt, Crookshank, Raymond, Walters, Woods, Tattersall, J. F. Simpson, and a great number of other members of the profession.

After dinner, the usual loyal toasts having been duly honoured, Professor BROWN, C.B., proposed "The Army, Navy, and Reserve Forces."

The Duke of CAMBRIDGE, in responding, after referring to the necessity of maintaining the efficiency of the services, said that with regard to the object for which they had met together, he had had much pleasure in accepting the invitation of the President, because he considered that there was a very strong connecting link between the profession over which he had the honour to preside and the profession which was so largely represented there that evening. (Cheers.) Military affairs had large dealings with the duties with which those present were connected, and if it were not for the assistance which they received from the veterinary profession, the army would very often be placed in a very difficult position. (Hear, hear.) He hoped it would be acknowledged that he had on all occasions given every support to the valuable work done by that profession, and he thought from the fact that Sir Henry Simpson, Professor Brown, and his excellent friend Mr. Fleming had honours conferred on them, and that one of their members had recently been decorated for his services in connection with the perilous mission to Abyssinia, it was evident that the Government were at all times willing to admit the value of the gentlemen connected with the Veterinary Department. (Hear, hear.) One of the most difficult questions to be considered at the present time was the question of transport, which depended upon the value, utility, and efficiency of the animals that had to conduct it; and in that respect he did not know what they should do without the assistance they received from the veterinary gentlemen in the service, or those engaged under military authority in looking after those important matters. (Hear, hear.) He was sure that but for their aid many of our campaigns would come to a grievous and unsuccessful end. He, at all events, had the highest appreciation of the assistance they had given in times past, and he looked with confidence for further assistance in the future. (Cheers.)

Dr. FLEMING, C.B., then gave "The Lords and Commons."

Lord HARRIS, who responded for the Upper House, referred to the exceedingly responsible duties which veterinary surgeons had to perform in the country in connection with the Diseases of Animals Act. He did not know of any more difficult task, and he had never yet come across a landowner who was prepared to throw any doubt on the *bonâ fides* of the veterinary surgeons of the country. (Hear, hear.)

Sir GEORGE RUSSELL, M.P., responded for the House of Commons.

The Duke of CAMBRIDGE, in proposing the toast of the evening—"The Royal College of Veterinary Surgeons and the President"—said that every condition of life had progressed during his lifetime in a manner which seemed almost incredible, and he knew of no profession which had made such great advances as the veterinary profession. When he joined the army, the disease of Glanders among horses was very common. It was a most dangerous disease, which could not be cured, but which could be prevented by good management and care; and the result of the care and attention that had been given to it was seen in the fact that in 1887 not one single case of Glanders in the army had been brought to their notice. (Cheers.) He looked forward to the time when the admirable and useful profession to which those present belonged would extend still further the great advantages it had been able to give to the community, and he felt that the Royal College of Veterinary Surgeons was one of those institutions which ought to be supported and fostered on every occasion. (Cheers.)

The PRESIDENT having responded, the more official proceedings closed with the toast of "The Visitors," proposed by Mr. CARTLEDGE, and acknowledged by Colonel KINGSCOTE, who referred to the great advances made by the veterinary profession in recent years, and the difficulties with which it had to contend. He also alluded to the obstacle thrown in the way of protective inoculation by the Vivisection Act and the anti-vivisectionists.

SOUTHERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE annual meeting of this Association was held at the White Hart Hotel, Guildford, on March 29th, when the subject for discussion was that of "Comparative Pathology—Eczema," on which Mr. W. Alston Edgar gave a lecture. The chair was taken by Mr. Barford, and the members present were Mr. J. D. Barford, Southampton, President; Messrs. J. B. Martin, Rochester; J. Carter, Guildford; F. Smith, A.V.D., Aldershot; Hunting, London, Legge, Dorking; Professor Pritchard, London; F. W. Wragg, Chas. Carter, Guildford; J. F. Simpson, Maidenhead; A. C. Piesse, Red Hill; W. A. Edgar, Dartford; E. A. Hollingham, Tunbridge Wells, Hon. Secretary.

The minutes of the previous meeting having been read and confirmed,

Letters of apology for non-attendance were read from Messrs. Hogben, R. A. Stock, F. Raymond, Dr. Fleming, C.B., F. Warren, J. V. Blake, H. King, and Sir Henry Simpson.

A letter was read from Mr. Gooch, the Honorary Secretary of the Lincolnshire Association, stating that at their meeting on January 26th it was unanimously resolved that Captain H. B. Russell, of Grantham, should be the President's nominee for election to the Council of the Royal College of Veterinary Surgeons.

Mr. BARCHAM, of the Norfolk and Eastern Counties Association, also wrote, saying that Mr. G. A. Banham, F.R.C.V.S., Cambridge, had been nominated by them for election on the Council. The members trusted that their choice would meet with the approval of the Southern Counties Association, and that the members of that Society would give Mr. Banham that undivided support which they gave to the Southern Counties Association's nominee in the past. The Association decided to support these gentlemen.

A statement of accounts for the past year was submitted by the Hon. Secretary. It appeared that the year was commenced with a balance in hand of £23 6s. 7d. The receipts amounted to £20 10s. 6d., making a total of £43 17s. 1d. Of this sum £13 2s. 2d. had been expended, leaving a balance to the credit of the Society of £30 14s. 7d.

On the motion of Mr. WRAGG, seconded by Mr. SIMPSON, Professor Pritchard was unanimously elected President for the ensuing year.

Mr. WRAGG proposed Mr. Barford as Vice-President.

This was seconded by Mr. J. F. SIMPSON, who also proposed Mr. Carter, of Guildford, as a Vice-President, remarking that whilst they had had very good Vice-Presidents in the past, it was a wholesome custom to vary occasionally.

Mr. BARFORD seconded, and both gentlemen were elected.

Mr. Martin and W. A. Edgar were re-elected.

Mr. E. A. Hollingham was unanimously re-elected Hon. Secretary.

Mr. W. ALSTON EDGAR next read the following paper on

“COMPARATIVE PATHOLOGY—ECZEMA.”

The tendency to study pathology in its widest sense, regarding species of secondary importance, appears to be steadily gaining ground, and this line of work must, from a scientific standpoint, be regarded as of even greater importance to the medical and veterinary professions than comparative anatomy and physiology.

It is most remarkable that, as man has everything in common with the lower animals from an anatomical and physiological point of view, he should so long have been separated by the strong barrier of prejudice from his companions in disease and death, and have been assigned an imaginary place of isolation in the domain of pathology.

The veterinary profession must gladly welcome the ennobling of its work by this higher association, as hitherto disease in the domesticated animals has been chiefly studied in relation to its effects upon themselves, and not its probable influence indirectly upon the health of mankind.

I must confess to being one of a number in our profession who take a moderate view of the transmissibility of disease from animals to man, and welcome comparative pathology for the immense benefit it must confer upon veterinary medicine, if strict comparisons may be widely made in diseases, usually looked upon so confined to one species.

For the most part, comparison has been made between those diseases which, either directly or indirectly, are communicable from man to the lower animals, and *vice-versâ*.

Mr. J. Bland Sutton's interesting work in comparative hypertrophies, malformations, etc., almost suggests common causes for pathological changes in all species. That such common cause exists in some panzootic maladies, such as Glanders, Anthrax, Rabies, is clearly demonstrated; it is almost equally clear that in the group of communicable diseases between man and the lower animals, a similar micro-organism may operate as a common cause—*e.g.*, Tuberculosis and Actinomycosis—although the organism may possess minor points of difference, and the pathological changes induced may become modified in different species. Again, a zymotic disease, such as Variola, may be represented in several species, having many symptoms in common, and yet not be intercommunicable—*e.g.*, Small-pox, Cow-pox, and Sheep-pox; although, it would appear, there are some few persons who still believe that Vaccinia is Small-pox modified by its transit through bovines.

Those, however, who hold this view do not attempt any explanation of the suspension of the natural law of reversion to original type, and show how it is that in a series of generations the virus does not regain its normal virulence in natural soil, and again become capable of producing, instead of protecting from, Small-pox.

Further, there are some diseases, such as Diphtheritis and Scarlet Fever, possessing in man well marked and easily recognised symptoms with a definite etiology, which diseases are *supposed* to have their counterpart in the

lower animals. The former probably affects the gallinaceous family, but it requires far more demonstration before it can be accepted as affecting calves and pigs. I am strongly of opinion that the so-called cases of Diphtheritis in the pig have been due to ingestion of Anthrax blood or flesh, which, under certain circumstances in the pig, produces Malignant Sore Throat, Tonsilitis, and Ulceration of Pharynx and Larynx, frequently causing death; although I am informed by an eminent bacteriologist that pigs possess complete immunity from Anthrax, and this he concludes because the bacillus anthracis is not found in the blood and tissues after death.

All are probably familiar with the recent attempt to establish, in the case of Scarlet Fever, its identity in man and bovines, but with what success the issue best determines.

The work done, however, in this direction has had its negative value in establishing our ignorance in comparative pathology; and it is to be earnestly hoped, in the interest of medical and veterinary students, that the proposed teaching University of London may, in the event of its establishment, be enabled to found a chair of comparative pathology.

In America comparative anatomy and pathology receive much more attention than in this country, and the *Journal of Comparative Medicine and Surgery*, published at Philadelphia, is superior to any corresponding periodical at the service of the profession in this country. I am free to admit that a very large share of advantage in the study of disease on comparative lines must fall to the veterinary pathologist.

The splendid strides made during the last decade in medicine and surgery are capable, in many directions, of application in our profession. We can profit largely by applying general principles in dealing with disease, and by a study of current medical literature the veterinarian may trace analogy in etiology, semiology, and treatment, in a large proportion of diseases affecting the lower animals.

We have many advantages denied to practitioners of human medicine, in following up our diagnosis and treatment by *post-mortem* examination, owing to the comparatively short lives of many of our patients; and thus, by careful observation and a record of our work, we may return to the sister profession at least a remunerative interest. For instance, in the subject of this paper—Eczema—the surgeon has few, if any, opportunities of demonstrating *post-mortem* observations made during the life of his patient; but by the veterinarian they may, with moderate effort, be followed out in almost every case.

In the present state of our knowledge, however, one thing is especially clear—that any inquiry concerning diseases of the lower animals in their relation to public health should be conducted conjointly by representatives of the medical and veterinary professions, as laboratory and clinical observations would then probably be more in harmony, and calculated to secure the advancement of truth.

It is scarcely necessary that I should point out that the subject of this paper—Eczema—has no connection with the zymotic form, Eczema Epizootica, otherwise known as "Foot-and-mouth Disease," my desire being to trace analogy in diseases other than of an infectious type.

Several diseases of great interest and common to different species, might have been chosen—such as Cancer, Ovarian Cysts, Pneumonia, etc.—but my selection of Eczema is due to a very considerable experience of that malady during the past eight years, in most of the domesticated animals, together with the fact that comparatively little information is available for a study of it.

Although Eczema is usually regarded and classified as a skin disease, I have some doubt if it is but exceptionally, *per se*, a cutaneous malady, but

rather to be regarded as a subjective disease—an index, whereby the pathologist may read the hidden pages of visceral derangement and structural change.

I am confirmed in this opinion by a large number of *post-mortem* examinations in the dog and pig, and in two in the horse, some of which I will subsequently quote.

Eczema may be defined as acute or chronic Hyperæmia and Inflammation of the Dermis, accompanied by, as its name implies, an exudation of serum from the cutaneous capillaries.

All the varieties of the disease described simply represent a series of pathological changes, and the terms usefully express the various objective signs of the malady—viz., redness, œdema, papulation, exudation producing vesication, with rupture of vesicles and incrustation, subsequently followed by—in the more chronic forms of disease—desquamation of epidermis, thickening and induration (local or general), generally the former, frequently accompanied by fission or cracking of the skin. The subject of Eczema is conscious of certain subjective sensations, such as intense burning, itching, and pain; the two latter only can be demonstrated in the lower animals, although it may be reasonably concluded from manipulation of the diseased parts that the burning sensation is actually experienced. Intense itching is patent in all animals; pain is frequently evidenced upon palpation, and by constitutional disturbance.

It is interesting to note the remarkable analogy in the varieties of Eczema met with in man and domesticated animals; by taking up all the above species, almost every phase of the disease detailed by the late Sir E. Wilson may be compared—*e.g.*, I have observed—

Eczema erythematosum or rubrum in the horse and dog.

E. papulosum in horse and dog.

E. vesiculosum in horse, cow, sheep, pig and dog.

E. pustulosum or *impetiginosum* in horse, pig, and dog.

E. ichorosum in horse, cow, and dog.

E. crustaceum in horse, cow, and dog.

E. siccum in horse and dog.

E. squamosum in horse, cow (parasitic and chemical only), pig, and dog.

E. fissum in horse and pig.

E. hypertrophieum horse (extremities only).

The above varieties assume an acute or chronic form in the different species.

Acute Eczema occurs in horses, cattle, sheep, pigs, and dogs; and chronic forms in horses, pigs (rare), and dogs only.

Again, correspondence in localisation of the disease in the several species is remarkable. Local forms occur in man, horses, cattle, sheep, and occasionally in dogs—*e.g.*, nasal and orbital Eczema; but in the pig and dog the disease in either variety is most commonly diffused.

Labial and facial Eczema in man, horse, and sheep, the so-called “*crusta labialis et facialis*,” which represents *E. crustaceum*.

Mammary Eczema in cow, described by some writers as “Blister-pox” and “Black-pox,” which, however, frequently also exists on the soft skin from the umbilicus to the mammæ, but is commonly unnoticed, owing to its position. Orbital Eczema is also seen in cows.

Local Eczema in its chronic form is well represented in the extremities of man and horse in *E. fissum* and *hypertrophieum*, known to veterinary writers as *psoriasis carpi et tarsi*, or “Mallenders” and “Sallenders”; and the chronic transverse fissures from knee to fetlock, described under *psoriasis*, and the indurations of “grease”—sequela of Eczema.

In the etiology of Eczema, however, is found the most interesting and

useful comparisons, as it appears fairly demonstrable that conditions which operate in its production in man, are also conducive to similar results in the lower animals, modified in different species.

If this be true of Eczema, it may be equally so in many other pathological conditions, and it may be possible by such comparison to explain many obscure causes of disease in certain species, which, being occult in one, may be capable of demonstration in another, if, as appears more than probable, common causes have common results, modified only by species and circumstances.

Causes may be divided in all animals into extrinsic and intrinsic.

In the human subject, causes operating from without are referred to as irritants acting locally—*e.g.*, heat, moisture, friction, chemical agents, exposure to sun's rays, etc.

Similar causes are doubtless in operation in the lower animals, with parallel results, but, I think, almost invariably associated with some constitutional disturbance acting as a predisposing cause.

For instance, it frequently happens that a flock of lambs or sheep are depastured upon vetches in the summer, and when a large quantity of thistles are present in the tares, a severe outbreak of labial and facial Eczema may occur. This, however, happens more frequently when the lambs are receiving an additional diet of albumenoid food—as cake or peas. These outbreaks occur on other green feeding stuffs than vetches, but rarely when sheep are upon a green food diet only, although the pasture may be charged, as it were, with thistles.

Again, in the horse, flannel-lined collars and pads are a frequent source of scapular and dorsal Eczema to sensitive-skinned animals; but the predisposing cause of the disease is invariably an important change of diet or constitutional condition affecting the excretory and digestive apparatus, the local manifestations being due to congestion and friction. I think exposure to continuous moisture operates as an entire cause in the production of Eczema of the heels and pasterns in horses, which in its later stages may become transformed into the chronic condition described as "grease." Also vesicular Eczema of extremities due to irritation produced by *Symbiotes spathiferus* is, of course, due to external conditions only. I have seen several cases of Eczema produced in cattle and sheep by chemical irritants—arsenic and paraffin oil—but must regard such cases as purely artificial conditions.

I have never, to my knowledge, seen it produced by the action of the sun's rays in any of the lower animals—their hair or wool-covering probably preventing this.

Local mammary Eczema in the cow, the Blister-pox and Black-pox (which is *E. crustaceum* *plus* dirt, etc.) of milkers, is possibly caused by irritation from the hands in milking, or lying in constant moisture, especially decomposing urine. I think the latter is the true exciting cause, as the eruption frequently exists on the soft skin from the udder to the sternum, although, as previously stated, it is frequently unnoticed in this position. I say possibly caused by irritation, etc., because I think this disease, manifested locally in the cow, is always primarily caused by constitutional conditions. A few weeks ago a severe case of orbital Eczema occurred in a cow under my notice, the eruption being confined to the eyelids and sides of face; this was suppressed by systemic and local treatment; there was no explanation for its localisation.

In the human subject, causes—constitutional—are referred to under nervous shock, disturbed nervous function affecting nutrition and circulation, in many cases caused by disordered digestion, painful dentition, menstruation, uterogestation, and parturition, Eczema being not infrequently an indication of broken health.

Many of the foregoing clauses are in operation in the production of Eczema in our patients, especially those referable to disturbed circulation and digestion.

It is difficult to define how far disturbed nervous function is a primary cause in any of the domesticated animals. Eczema is common in children during dentition. I have observed several outbreaks of the vesicular form in pigs during the eruption of the temporary teeth, but am not aware that this is a cause in any other species.

I have seen no cases in any animals which may be traced to æstrum, utero-gestation, or parturition.

Two things have struck me as remarkable in the study of this subject—viz., the almost constant hepatic and occasional splenic changes in the lower animals; and, in medical literature, an almost total absence of any reference to either hepatic or splenic derangement as a complication of Eczema, excepting, so far as it may be inferred, under dyspeptic conditions associated with hæmorrhoids or varicose veins.

I am of opinion, from *post-mortem* examinations made in the horse, pig, and dog, and from the line of treatment most successful in those animals, that the liver is the viscus which is, in a large proportion of cases, the primary cause of cutaneous disturbance.

This, of course, will not apply to those cases of chronic Eczema in the dog which are coincident with cardiac disturbance or valvular disease with secondary hepatic changes.

Personally, I have been a subject of local Eczema for many years, and it frequently occurs either in conjunction with or immediately after functional disturbance of liver.

Acute Eczema is frequently fatal in very young pigs—*i.e.*, from three to six weeks old, and under the circumstances it is not infrequently reported for Swine Fever. A whole litter will sometimes die off, and the only *post-mortem* changes remarkable are the intense congestion of the liver and the marked cutaneous eruption, which is equally distributed over the whole skin surface down to the knees and hocks.

It may be of practical interest to make a few further remarks upon this disease in pigs. Although very fatal up to the age of six or seven weeks, it is rarely so after that time. It occasionally requires considerable care to differentiate between the vesicular and crustaceous variety of Eczema and Swine Fever, the pathological changes being almost identical where the well-marked cutaneous form of the latter disease is present.

In Eczema, however, the temperature is not above 103.4° , the *purple* condition of skin is not present, and the pigs do not die; and it will also be noted that the attack is generally confined to the same litter, indicating an absence of infection, although several animals may be attacked.

It has struck me that heredity must play some part under such circumstances, as I have noted such cases where several dozens of animals have been exposed to the same dietetic conditions and sanitary surroundings.

In many *post-mortem* examinations of the dog, I have noticed the same marked congestion of liver as is present in young pigs, but generally accompanied by considerable softening of structure. I may, however, explain that all, or nearly all, such observations have been made in dogs probably over three years of age, and subjects of recurrent Eczema of many months' or years' standing.

The mucous membrane of the stomach and intestines is invariably normal.

Several cases of cardiac disease, chiefly valvular, have been associated with hyperæmia and hypertrophy of liver, accompanied by chronic Eczema. With such lesions I have regarded the heart mischief as the primary cause of Skin Disease.

The frequency of such cases in canine practice renders it important to make a most careful examination of the circulatory apparatus before venturing a prognosis.

I have no *post-mortem* evidence of Liver Disease in horses or cattle coincident with Eczema, but I desire to draw attention to two cases in the horse of chronic localised vesicular Eczema associated with diseased spleen.

Case No. 1: A brown horse had been the subject of Eczema of the extremities for two or three years, which required constant local applications to keep in check, also intermittent courses of medicine; no treatment, however, afforded more than temporary relief.

A few months before the animal was destroyed, it suffered from an acute attack of labial Eczema, involving also the inside of mouth, the vesicles breaking and healing readily; the animal, although generally a fairly good "feeder," seldom looked well, and was dull at work, the lassitude being greater sometimes than at others. Before the final illness occurred, the lassitude became so marked that the horse was rested.

The appetite continued moderate, and excretions normal; but there was marked pain upon percussion over the region of liver, arching of back, and groaning when turned suddenly round; the mucous membranes were always slightly icteroid.

My diagnosis at this stage was enlargement of liver; but upon rectal examination I found that the spleen was enormously enlarged, and several nodules, about the size of walnuts, could be felt through the bowel. The animal was destroyed, and the *post-mortem* showed enormous splenic enlargement, with an uniform diffusion of the tumours throughout the whole structure of the spleen, presenting upon section the characteristic features of Lymphadenoma. I conclude, from a similar case, at present under observation, that the Eczema was caused by the condition of spleen.

In case No. 2, the animal is still living. It has been a subject of chronic facial Eczema for two years or more. I am not aware that any treatment has been adopted. It came under my notice owing to staggering fits in the stable. I found cardiac disturbance, and consequently made an examination of the liver and spleen. The latter was sufficiently enlarged to be felt *per rectum*, and I concluded that (owing to the animal being a white one) the disease was probably Melanosis, although no external evidence of that condition existed.

While I refer to functional derangement and structural change of the liver as a very frequent cause of Eczema in the lower animals, I am free to admit that many cases may be due to disturbance, from dietetic causes, of the digestive organs generally, and also venal changes which, by constantly disturbing the vicarious cutaneous circulation, tend to establish the localised or general congestion, which, with a naturally weakened skin tissue, is quickly followed by irritation and exudation.

In general practice, by far the most frequent patients are horses and dogs; the latter are attacked in large numbers all the year round, probably owing to the artificial conditions under which so many dogs are compelled to exist.

I cannot trace any analogy in man and the lower animals in Eczema as an indication of broken health; as a large percentage of cases occur in dogs and horses in a plethoric condition, especially the former, when being well fed and allowed but little exercise, the liver becomes inactive, and Eczema is commonly the result. That this is a fruitful source of the disease is evidenced by the salutary effect of diametrically opposite conditions being imposed when the animals are under treatment.

Eczema occurs occasionally in dogs after surgical operations, and also as a complication during convalescence in some acute diseases, as Distemper, and

in the horse after Influenza, or any prolonged illness, when the animal is rapidly regaining strength and receiving large quantities of nitrogenous food.

Prognosis is identical in man, horse, and dog; in each the disease is often tedious and difficult to cure, recurring at irregular intervals or seasons, patients being sometimes under treatment for many months, the ultimate issue largely depending upon the primary cause. I have seen no chronic Eczema in sheep or cattle, and only one case in the pig—a sow in which the disease lasted for about four months, and assumed the varieties of *E. vesiculosum*, *E. crustaceum*, and *E. fissum*, well marked cicatrices being formed upon all parts of body. She was killed in a very fat condition, with the disease in an active state.

Treatment, by comparison, is of special interest, and it may, I think, be fairly concluded that success lies in the direction of adoption of general principles, which may be generally followed in dealing with all species.

Where causes are identical and the variety of disease similar, treatment at the outset will be much the same in any animal. Of course, the selection of drugs will in many cases differ, for simple convenience of exhibition or application. Idiosyncrasy, I feel convinced, plays an important part in domesticated animals, as in man; for it may be often noted that certain drugs which act successfully in one animal will, when applied to another of the same species, under apparently precisely similar circumstances, have no curative effect.

Eczema, in one or more of its many varieties, is probably the most common skin disease by which the horse and dog is attacked, dogs being, in my experience, affected with special frequency and in large numbers during the spring and summer. Chronic recurrent Eczema is more common in this species than in any other.

Under almost all circumstances, local and systemic treatment is necessary, the former, except in one or two chronic phases of local Eczema in the horse, being rarely successful alone.

It is quite beyond the scope of a limited paper of this kind to enter into detailed treatment for the different varieties of the disease in all the species enumerated as affected by it; and I propose only to follow, in this portion of my subject, the same general line of comparison.

It is not always possible to define the exact cause or causes of each special attack in any given animal, but, where a number are affected simultaneously, the cause may be generally referred to dietetic derangements, and under any circumstances a change of diet is beneficial, if not essential.

It is necessary to correct any dyspeptic conditions, if existing, and to promote, by regular exercise, hepatic and cutaneous circulation, in order that the normal functions of the skin may be stimulated, and the tendency to localised congestion overcome. I think this essential exercise, in the treatment of dogs and horses, is a point often overlooked and omitted.

In the horse, when severe Eczema of the heels exists, exercise cannot, of course, be had recourse to, or transverse cracking of the skin may possibly be caused.

In outbreaks of the disease in sheep and pigs, and entire change of diet and situation, in conjunction with the administration of salines, for a couple of days is often the only treatment necessary. Liquor arsenicalis is with advantage given to sheep, if any further treatment is called for; but, as I have stated, these animals do not often suffer from a secondary attack, or with the disease in a chronic form. My further remarks will apply to horses, cattle, and dogs.

A glance in Dr. Ringer's therapeutics, down the list of drugs suggested in the treatment of Eczema, will indicate at once that the action of medicines

in man and the lower animals is identical, as one may choose from that list most of the general agents employed by veterinarians in the treatment of this disease.

I desire to call attention to two or three agents, not generally used in the treatment of Eczema, which may be employed with special advantage.

The most common varieties in the horse I find to be vesicular, pustular, and perhaps dry Eczema—*E. siccum*—where alopecia takes place all over the neck, shoulders, and back.

This is often a most obstinate form to treat.

The catarrhal form, *E. ichorosum*, is not uncommon; it is generally acute over one large division of body—*e.g.*, the hind-quarters or back. I have also seen some remarkable cases of this variety in cattle.

A mild saline purgative in the cow, and an aloetic in the horse, when the animals are in good general condition, is the best preparatory treatment, followed for a few days by magnes. sulphate and potass. nitras, in small doses. If the skin does not resume its healthy condition after the first effusion, a course of iron carbonate or liquor arsenicalis, generally effects this result, although, in some cases in the horse, arsenic appears to be of questionable use.

Locally, no drug seems to act so well in arresting the catarrh and irritation as a solution of plumbi subacetate or hydrarg. perchloridum, one part to one thousand in water. This is the least obstinate form of Eczema in horses and cattle, although it generally attracts much attention owing to the suddenness of attack and apparent severity.

Similar treatment in the vesicular form is pursued with advantage at the outset; but here there is a greater tendency to assume a chronic condition.

Under such circumstances, the mucous membranes and liver must be carefully watched. Bicarbonate of potash and soda replace the mag. sulph. and nitrate of potash, and a small dose of calomel is useful once a week or oftener; after a fortnight, liquor arsenicalis or bromide of arsenic, alternated with a course of strychnia.

Externally, a stimulating lotion often relieves the intense itching, when lead lotions and ointments fail to do so. Here I may especially mention the remarkable effects in some cases resulting from the application of Professor Tuson's "*Sporokton*," which, as is generally known, is a preparation of zinc and sulphurous anhydride, there being much free gas. This dressing certainly does act in some cases in the horse and dog almost as a specific. Its curative effects in "*grease*," as a result of Eczema, have only to be more fully recognised by the profession to be largely appreciated. Upon one occasion a lady who was suffering from Eczema was so struck with its effect upon her dog that she sent for a bottle for herself, and the result was equally satisfactory.

Where itching is intense, and considerable surface has been denuded by friction or scratching, the oleate of lead acts well.

E. pustulosum in the horse has given me more trouble than any other variety, and I am of opinion, from its recurrence year after year, that it is generally associated with hepatic changes. Under any line of treatment, it is liable to recur. A frequent change of diet is useful.

A case came under my notice a few months since which had been under treatment for nearly a year by different veterinary surgeons. I suggested a liberal supply of mangold wurzel per day, and without any medicinal agents the animal was in a few weeks well. This recovery will, however, probably be only temporary. I have found little or no benefit from arsenic in some of these cases, but better results from hepatic stimulants.

The treatment as indicated for vesicular Eczema in the horse is equally successful in the cow. The local mammary form is usually overcome by an unguentum of diacetate of lead. In several large dairies in my practice,

clients having a supply of this ointment treat their cases of Blister-pox without any constitutional agents, except, possibly, a mild saline draught.

In the dog, *E. rubrum*, *vesiculosum*, and *crustaceum* are the varieties met with in every-day practice; ten per cent. of such cases, I think, prove chronic and troublesome, some taxing one's knowledge of the pharmacopœia.

I think it is a mistake to restrict dogs to one special form of diet, as is so frequently done; animals, for instance, kept almost entirely in a house are allowed little or no flesh food, and a farinaceous diet entirely, predisposes dogs to liver congestion and Eczema.

Under such circumstances, an opposite diet is indicated; this applies to any form of the disease.

At the outset, mild aperients, followed by hepatic stimulants and nerve tonics. I may here draw attention to the action of euonymin, having found from personal experiments that the drug was capable of producing an enormously increased excretion of bile. I was led to try it upon the dog in Eczema, in conjunction with small doses of strychnia, and it acts in very many cases with remarkable success.

The action of this drug has led me to conclude, in conjunction with *post-mortem* evidence, that liver congestion is a very frequent cause of Eczema, quite apart from any disturbance of the stomach or intestines.

During the course of treatment an occasional aperient is an advantage; also administration of potass bicarb. in food. As tonic agents, quinine and strychnia, I think, act the best, given alternately with iron carbonate and sesqui-carbonate of ammonia.

For local applications, solution of subacetate of lead in the acute forms, where exudation is great and the irritation intense, is, as in the horse, very useful, or oleate of lead, or zinc benzoate ointment, may be equally efficacious. When the skin has been much scratched, the ointment affords protection and comfort. The powders useful in the human subject are of little use in the lower animals, owing to the action of the panniculus muscle.

Where the disease has become more or less chronic, and the skin tissue in a low nutritive condition, stimulants must be applied. I place foremost "Sporokton"—the strength of solution to be regulated by the condition of skin.

Tar, sulphur, and turpentine ointment, freely applied, often stops the intense itching in the form *E. rubrum*; and in many cases, where every other dressing has failed, iodide of sulphur ointment will effect a cure. Either of these agents also act well in the dry, diffused Eczema of the horse, and in the local form affecting knees, hocks, and back of legs, from centre to fetlocks, an ointment of belladonna extract and glycerine is very useful, softening down the skin and preventing the obstinate cracking and induration.

From this brief outline of the treatment adopted in Eczema of the lower animals, it will be noted that certain medicinal agents give almost identical results in all species, from man downwards—which I think, in conjunction with the analogy demonstrated in etiology and semiology, tends to establish the advantage which must accrue—at any rate, to veterinary medicine—from a study of comparative pathology.

The interest shown in this direction by medical workers, and the prominence given to the subject by the leading medical journals, should encourage our profession to share to its utmost ability, on this common battlefield, the burden of the fight with disease and death—the inheritance alike of man and his dumb companions and slaves.

The PRESIDENT said he was sure they had all been gratified by the highly scientific paper which Mr. Edgar had read, and he trusted they would have a useful discussion upon it.

Mr. SIMPSON said he regretted to have to leave the meeting. Had he been

able to stay, he should have referred to the frequent cases he had seen of fits in dogs following an attack of Eczema.

Mr. HUNTING said that the first thing which struck him was that, although the paper pointed out the great advantages of a study of comparative pathology, it was rather an illustration of one of its defects. If there was one skein in medicine more tangled than another, it was the pathology of the skin diseases of the human subject. To divide Eczema into so many heads as it was divided simply confused the matter. They had, in Eczema, every skin disease they could think of. If there was such a thing as Eczema, they would find that it comprised all skin diseases. The fact was, they knew absolutely nothing of these constitutional forms of skin disease. (Laughter.) It was a fact. In Eczema they had a term which covered a multitude of skin diseases. It was important, therefore, to define at the outset what they meant by Eczema, and he would at once limit it to that skin disease which commenced with the vascular eruption. The term "exudative skin disease" was a fair term to describe what one meant by Eczema—a disease in which the first symptom was irritation of the skin. The moisture dried up, but the irritation continued, and then came scurfiness. Following this, there came scales, the skin having thickened and cracked, all these being the symptoms of Eczema. He did not believe in the different varieties of Eczema; they were simply the different stages of the disease. Sometimes the disease hung in one stage longer than another. The paper also alluded to the difficulty of arriving at anything like the true cause of the disease. They found Eczema in horses and dogs, under all sorts of circumstances, and in all sorts of animals. He was willing to allow that there were conditions which they found more generally connected with it, but the difficulty was in distinguishing the true cause from what he might call the accidental cause. Nearly every animal that had passed the stage of maturity suffered from some weakness or another. He might find an animal with Liver Disease, and suffering from Eczema at the same time, but it did not follow that there was any connection between the two diseases; or the same animal might have Heart Disease, but it was not necessary that there should be a connection with Eczema. If any one could show him statistics which showed that those two diseases occurred together in a large number of cases, then he would allow that it was logical they should connect them. But was it so? He agreed with Mr. Edgar in connecting hepatic changes with Eczema—at any rate, in the dog. His experience in Eczema was entirely confined to horses and dogs. They had in the dog functional derangement of the digestive organs, and there was nearly always a recurrence of disease. If a dog had Eczema he would surely have it again. It occurred, too, in the spring and autumn; and one had to consider two things then—the climatic changes and the change of the animal's coat. He had no doubt in his own mind that one cause of Eczema was that it was hereditary. Over and over again he had detected it in St. Bernards, in whom there was particularly a tendency to recurrence. In some cases, not one of them escaped from their puppyhood upwards. With regard to the mode of treatment, he agreed with Mr. Edgar that internal remedies were as requisite as external remedies, but that brought him to another point. Most of the cases mentioned by Mr. Edgar were cases in which no internal remedies could be applied. He held that they were not Eczema, and had no right to be called as such. As to the irregular action of drugs, there was no wonder that they acted irregularly, when the same drugs were used in twenty different cases in which twenty different symptoms were visible. If they did not know what the cause of the disease was in nineteen cases out of twenty, they were not likely to get their drugs to act regularly. It seemed to him impossible to explain very much about the treatment of Eczema. They used a certain thing because

somebody else used it before them, and they believed it would be efficacious. For some years he used arsenic alone, until he was horribly disappointed. (Laughter.) And now he never used it except in combination with iron. He did not know why, except that it was because somebody else told him to. His experience, however, was that it was a good mixture. With regard to local treatment in the vesicular stage, they should dry the discharge with an astringent. If it had to be dried, they should not use stimulants, except in the last chronic stages of Eczema, for they did more harm than good, and the animal went half mad through their application. The chief thing was a change of diet. He thought he had made a discovery some years ago. He adopted the plan of feeding dogs suffering from Eczema entirely on meat, but he found that their friends, Professor Pritchard and Mr. Field, junr., had made the same discovery. (Laughter.) It was found to answer, and he was inclined to think, therefore, that there was a great deal of truth in the efficacy of the treatment. If he had a dog suffering from Eczema, he invariably changed his food, but for the first fortnight or three weeks he put him entirely on meat food.

Professor PRITCHARD said that Mr. Hunting had really been his mouth-piece, for he agreed with what he had said. They must come to the conclusion, he thought, that Eczema was an inflamed condition of the skin, giving rise, whether visible or otherwise, to an exudation. That was one conclusion he had arrived at, and another was that it might be due to chronic disease almost of any visceral organ, or it might arise from an excited cause, producing a temporary attack. It was a fact that the horse, after being clipped and exposed to the cold wind, frequently became attacked with the disease, and such a case was one which they might deal with successfully; but if they had a case arising from the disease of some internal organ, although they might for a time get rid of the mischief, it would recur. That was another conclusion he had come to. He had not used, in treatment, arsenic and iron combined, but he had used arsenic alone successfully inside and outside. Mr. Edgar had spoken very confidently of Professor Tuson's remedy. Well, he had resorted to sheep-dip very successfully in cases which would frighten some people. He attended to an outbreak in a stud on a farm of one of his clients, and tried in every way to get rid of the mischief, but he could not until he had recourse to this preparation of arsenic, which it really was. So successful was he that he entirely eradicated the disease from the stud. He agreed with Mr. Hunting when he said that if they were at a loss to know what to call a skin disease they put it down to Eczema. He did not think they had the true definition of the term Eczema beyond an inflamed condition of the skin. One remark he should like to make, in the form of a question. Mr. Edgar diagnosed a case of enlarged spleen from an examination *per rectum*. He should like to know how that was done. Taking into consideration the distance which the arm had to traverse through the rectum, and other points, he should like to know whether Mr. Edgar positively came to the conclusion, before the animal was destroyed, that an enlarged spleen existed.

Mr. SMITH, A.V.D., said that in India Eczema was the most common form of skin disease met with, and during certain periods of the year it was not uncommon to have 50 per cent. to 70 per cent. of the horses affected at one time, and this would continue until the rains had disappeared. The horses presented a pitiable aspect, their manes, in the majority of cases, being cut off for cleanliness, and the hair removed from the head, neck, and under the belly. So serious were matters at times, that stringent measures had to be adopted to put a stop to the outbreak. For a long time he was puzzled to know what the disease was due to, and he did not think he was sure now, but a professional friend of his (Mr. W. S. Adams, A.V.D.), who had worked hard

at the subject for a long time past, came to the conclusion, after a large number of experiments, that it was due to feeding on green grass. In India they had no hay, but the forage was carried every day (green). The orders were that it should be dry before being used, but that was impossible during certain months of the year. Generally only the exposed parts of the horses were affected with the disease. He felt sure that a change of diet—depriving them of green food and giving them dry grass—was most beneficial. The effect was very marked, for the disease would to a considerable extent disappear, although there were certain chronic cases which resisted all treatment. As to the connection between Eczema and some internal complaint, he might say that Liver Disease was frequently found at the same time, and the probability was that the two were associated. Often he had had very bad cases of diseased liver, some of them being enlarged to the extent of thirty and forty pounds. They had a nodulated appearance, due to lime deposits, and were speckled. He had seen mules that suffered from the same acute liver complaint, but without suffering from Eczema. He thought there could be no doubt, however, that there was a distinct connection between the green grass and Eczema. Splenic disease in India was rare, but skin disease was exceedingly common. He saw one spleen which weighed fifty pounds, and the chief feature was its extraordinary length, which was about two feet.

Replying to Professor Pritchard, Mr. SMITH said that a large spleen could be diagnosed through the rectum. Continuing, he said that exposure to heat was undoubtedly an exciting cause of Eczema. One case of skin disease which came under his notice was very singular; it was that of a horse suffering from acute Eczema, followed by an attack of Purpura. Suddenly, and without any warning, it commenced to lose all four hoofs. He was exceedingly surprised, and could do nothing. The horse lay down the greater part of the day, and he allowed the case to go on in order to watch its progress. The two hind hoofs had commenced to grow again, but the others did not. The only thing he could call it was Eczema of the hoofs. The horse suffered very much from skin disease. With regard to treatment, change of diet was essential. Mercurial ointment with soft soaps, was a useful dressing, and could readily be removed by washing. With regard to the diagnosis of enlarged livers, he once thought they could be detected by percussion, but he did not think so now; a horse's liver was completely covered by the right lung and the double colon.

The PRESIDENT agreed that the different classes of skin diseases which they had to deal with were perhaps more complicated than anything else which came under their notice. There was no doubt that the medical and veterinary professions had in many ways advanced the study of medicine, especially from a pathological point of view, by frequently conferring together and comparing notes on many diseases that occurred. A proof of that was to be found in the celebrated case which occurred at Hendon. He had not had very great experience of Eczema, but whilst it was found in dogs perhaps more than in horses, he quite bore out the idea that to a great extent it was constitutional. There could be no doubt that, if the liver was not doing its work, the skin would suffer. That the organs worked together in that matter was undoubtedly a fact, seeing that constitutional treatment was probably of more importance than external applications.

Mr. EDGAR, in replying on the discussion, regretted the lines which the discussion had taken, seeing that it was all on one side. The subject of his paper was Comparative Pathology, and Eczema was simply an illustration, and he endeavoured to make clear the advantages of comparing the disease in one animal with another. He had derived considerable advantage by applying his knowledge of medicine in the human profession to the lower animals. He urged that they should be prepared to take their share in the

field of labour with the medical profession, otherwise they would find themselves thrown out of the field of practical pathology altogether. The conclusions to which Dr. Klein came were in themselves great reasons for veterinary practitioners being called in with the medical men. (A voice: "They have been.")

Mr. EDGAR: Yes, secondary.

Mr. HUNTING: Professor Axe was the commencement of the controversy.

Mr. EDGAR: The conclusions to which Dr. Klein came were accepted and published, when the observations of the veterinary surgeons were kept in the background.

Mr. HUNTING: Yes, and were sneered at.

Mr. EDGAR: The error was made by Dr. Klein himself. If ever a man was in error, Mr. Cruikshank has shown that Dr. Klein was.

Professor PRITCHARD: The veterinary surgeons were certainly the cause of bringing to the front the mistake which Dr. Klein made.

Mr. EDGAR: So far as the public were concerned, the veterinary profession had no credit at all in the matter; the medical profession had the whole of it. The veterinary profession ought to be on a different footing entirely, in order to take its position in an inquiry of this kind, and that is why I should like to have seen the advantages of comparative pathology dwelt upon in this discussion. In the course of further remarks, Mr. Edgar referred to the distinction between Ecthema and Eczema, and said that it was because they did not take the trouble to discriminate between one phase and another that they found themselves in such a hopeless muddle, from which it was desirable they should soon extricate themselves. He thought Mr. Hunting agreed with him that hepatic derangements were common and coincident with liver changes. From his experience, he should say that if the heart of the dog was affected, the liver suffered secondarily; then the skin suffered, and he traced the cause of Eczema back to the heart. Professor Pritchard's remarks, he thought, supported the general tenor of his paper as to the action of arsenic. There was no difficulty in describing its action if they knew anything of therapeutics. He went on to explain that he had diagnosed an enlarged spleen *per rectum*, and said that he once saw one taken from a horse which weighed 75 pounds. Mr. Smith's remarks regarding the relation of diseases of the skin and of the liver were entirely confirmatory of his paper.

On the motion of the PRESIDENT, seconded by Mr. WRAGG, a cordial vote of thanks was passed to Mr. Edgar for his interesting paper.

Professor PRITCHARD proposed a vote of thanks to the President for the admirable manner in which he had conducted the meetings during the past year.

This was seconded by Mr. WRAGG.

The PRESIDENT thanked them for the compliment they had paid him, and said that for any little trouble he might have taken he was amply rewarded if he had given them satisfaction.

On the motion of Mr. WRAGG, seconded by Mr. EDGAR, a vote of thanks was passed to Mr. Hollingham for his services as Honorary Secretary during the past year, after which the meeting terminated.

The next meeting of the Association will be held at the First Avenue Hotel, London.

LANCASHIRE VETERINARY MEDICAL ASSOCIATION.

THE usual quarterly meeting of this Association was held at the Blackfriars Hotel, Manchester, on March 21st.

Present: Messrs. J. B. Wolstenholme (President), P. Taylor, W. A. Taylor, Thos. Greaves, T. Hopkin, J. W. Ingram, S. Locke, J. Moore, Chas. Phillips,

A.V.D., and Dr. Dixon Mann, all of Manchester; Messrs. W. Woods, sen., Wigan; W. Whittle, and Arthur New, Worsley; R. C. Edwards, Chester; T. Briggs, Bury; J. H. Carter, Burnley; F. P. Carter, Bradford; J. B. Taylor, Ashton-under-Lyne; J. M. Bennett, Rochdale; F. J. Jones, Leicester; James Hart, Oldham; and Messrs. George Morgan, R. S. Mitchell, and Arthur Leather (Secretary), Liverpool.

Apologies for non-attendance were received from Professors Williams, McCall, and Walley, Major-General Sir F. Fitzwygram, Messrs. W. Woods, jun., H. Kidd, Alex. Lawson, John Lawson, and John Malcolm.

Mr. W. A. Taylor nominated for membership Mr. J. Moore, M.R.C.V.S., of Manchester.

It was decided that the next meeting of the Association take place in Liverpool on the second Wednesday in June; also that a committee consisting of the officers of the Association with power to add to their number be appointed to revise the rules, and that it should meet before and report to the June meeting.

Mr. TEDBAR HOPKIN then read a most interesting and valuable paper on "Roaring." The majority of the members present took part in the discussion which followed.

Mr. F. J. Jones, of Leicester, exhibited several tracheotomy tubes and instruments, which were much admired.

It was resolved that the discussion on Mr. Hopkin's paper be adjourned till the next meeting,

A vote of thanks to Mr. Jones and to the President concluded a very successful meeting.

THE CENTRAL VETERINARY MEDICAL SOCIETY.

MR. HUNTING'S address on "Hereditary Disease and Veterinary Opinions," delivered on 5th April, 1888:—

MR. PRESIDENT AND GENTLEMEN,—Hereditary disease in horses is now a matter of public interest, and is to us a subject of professional importance, and the interest and importance of the question will inevitably increase, now that science is being applied in this direction.

I propose, first, to ask your attention to the question, What diseases are hereditary? And next, to the question of the value of veterinary opinion, and how it may be best applied.

I have tried to classify the diseases said to be hereditary as follows:—

1. Diseases affecting the organs of special sense (those of the ear, eye, etc.).
2. Ditto digestion (undefined).
3. Ditto respiration (Roaring, Whistling, and "Broken-wind").
4. Ditto locomotion (such as Spavin and Curb, Splint and Windgalls, Ringbone and Sidebone, etc.).
5. Ditto the feet (Navicular Disease and Laminitis).
6. Ditto the nervous system (Shivering, Epilepsy, and Stringhalt).
7. Ditto the skin (Eczema and Grease).

What strikes one at once, on looking over this list, is the fact that every one of the pathological conditions here named may arise under circumstances in which it is impossible to impute heredity as a cause. If we allow that every one of these conditions may appear without any hereditary predisposition, and simply as the result of extraneous causes, we have to ask and answer the question, "Can you determine by any definite symptoms which disease is hereditary and which is not?" There are, of course, two somewhat different points of view from which we may look at hereditary diseases. We may find them in a young animal, and wish to know their nature, with a view to forming an opinion as to how much, and for how long, the defect will

interfere with usefulness. This is not the point of view I now want your attention to. What I wish to discuss is the significance of a morbid condition in an animal used for stud purposes; and the only two practical questions seem to be, "Is it a serious fault?" "Will it be transmitted?" Let us now consider the diseases usually classed as hereditary.

Organs of Special Sense.—In the human subject diseases of these organs are certainly very often transmitted from parent to offspring. In the lower animals the eye and the ear may be affected with hereditary disease. In dogs, deafness is often hereditary. In the horse, the eye suffers from disease which may be transmitted; even accidental injury to the eye of a parent is sometimes transmitted to the offspring, but it is a question whether in such cases the eye was not diseased prior to the injury.

Cataract is transmissible, and Amaurosis is said to be; but I do not think this rare disease is the subject of sufficiently well-authenticated evidence to enable us to speak positively. Ophthalmia due to injury I should not class as hereditary, but there is evidence of transmission of Periodic Ophthalmia. How shall we say of certain changes in the eye—"Which depends upon accident and which is constitutional?" Blindness is such a serious unsoundness that I should say reject all stud animals suffering from it, or from conditions of the eye likely to produce it. The judges may over-rule such an opinion, when evidence of pure accident or of non-transmission can be adduced by the owner.

Organs of Digestion.—It is remarkable that no definite diseases of these organs show any evidence of heredity.

Organs of Respiration.—There is positive evidence of "Roaring" being transmitted from both sire and dam to the offspring. My experience is not sufficient to enable me to say whether "Roaring" induced in a stallion by Colds, Sore-throat, or "Strangles" is a non-transmissible disease. A great difficulty arises, owing to the fact that hereditary disease, as a rule, only becomes apparent in the offspring at the same age at which it appeared in the parent. We may find a four-year-old free from "Roaring" whose sire is a notorious "roarer"; but the animal shall at five have developed the disease without other appreciable cause. On the other hand, an animal attacked with "Strangles" at four years old may be left a "roarer," though both parents are free from hereditary disease. The infantile diseases of the horse usually appear between the ages of four and five years. About this time, too, appear hereditary diseases; this, too, is the time at which closer artificial surroundings and regular work come forward as possible causes of disease. The difficulty is to determine when a disease is due to external causes entirely, and when such causes act only as exciting causes upon a system predisposed by an hereditary tendency to certain morbid changes.

"Roaring" is very often hereditary, possibly nearly always. It is a most serious unsoundness, and therefore its existence in a stud animal should always be followed by rejection. Of course there are a few cases in which a horse "makes a noise," as the result of patent injury to the bones of the face or to the rings of the trachea. Such a condition I should not consider transmissible. "Whistling" we need not discuss. It is simply a degree of Roaring, and must be judged accordingly. "Broken-wind" is said to be a hereditary disease. It can be produced in a few days by feeding on dry musty hay, and only in old cases is it due to, or accompanied by, structural changes in the lung. I can understand the possibility of an old case being transmitted, but my experience is so slight as not to include a single observation of such an event. We want definite evidence—or rather, perhaps, I should say *I* do.

Organs of Locomotion.—Diseases productive of lameness in the horse are plentiful and various. Their causes are many, and if we can remove any

one of them we shall be doing good work. Amongst the causes we must undoubtedly count heredity, and this can only be met and eliminated by attention to the parents. What diseases are hereditary?

Spavin.—There is sufficient evidence of the very frequent transmission of this disease from parents to offspring. I do not deny that it may arise from external causes in animals whose parents had sound hocks; but as it is such a serious cause of lameness, I should always reject a stallion suffering from it. I should make no allowance because the hocks were otherwise well-formed, as I do not believe that any special form of hock, or any conformation of limb, renders a horse more or less likely to become spavined. Spavins are found in all sorts of horses with all sorts of hocks; the weak narrow hock is not specially liable to spavin.

Curb.—If I find curbs on both hocks in horses which have done little or no work, or are so young that I surmise little work can have been done, I conclude that they are due to hereditary predisposition, and consequently will most likely be transmitted. The best and healthiest horse may develop a curb as the result of a sprain, and one curb in a horse that had done hard work would not induce me to reject him as likely to transmit that defect. As a fact, the term does not indicate liability, but existing disease; the convexity of hocks called "curby" is a curb, and unless the convexity exist I know no condition which can be called "curby."

Splint.—Splints are very frequently—nearly always—due to hereditary causes. A young stallion with splints on both fore-legs occupying the same position on both, about the same form and size on both, may safely be charged with suffering from hereditary disease. Such disease will almost certainly be transmitted, but what if it is? Splints are sometimes a nuisance, very seldom the cause of prolonged lameness, and hardly ever the cause of permanent lameness. I am bound to allow their hereditary nature, but I should very much regret giving such an opinion if I knew it would be followed by disqualification of a horse for stud purposes. Splints are too trivial an unsoundness for which to reject a horse.

Windgalls.—I very much doubt whether this defect should be classed as a hereditary disease. I have no doubt that its existence in a stallion, unless positive evidence of marked transmission can be adduced, should be treated as a harmless condition.

Ringbone.—I look upon this unsoundness as the very worst cause of lameness commonly met with in horses. My experience does not embrace the use of stallions suffering from Ringbone. If it can be shown on reliable evidence that this defect is transmitted to the offspring, I should certainly reject any stud animal suffering from it.

Sidebone.—With the exception of splint, probably no unsoundness owes its prevalence so exclusively to heredity as Sidebone. It is the bane of big horses, and should be vigorously attacked by the rejection of all stud animals suffering from it.

Diseases of the Feet are too common in horses; some depend entirely upon external injury; some, though directly excited by injury, are only met with in feet the form or structure of which supplies the predisposing cause. To say that conformation is hereditary is only to vary the old formula, "like produces like." Narrow feet, wide feet, and flat feet are formations undoubtedly transmitted from parents to offspring. With less certainty, and in a less degree, are transmitted qualities of hoof. Strong tough horn is a characteristic of some families, as is a dry shelly horn of others. These conditions vary in degree, and may exist without any disease. Unless disease is present, a veterinary surgeon cannot class them as unsoundness. He may call them hereditary conformations of an undesirable kind; but he cannot pronounce them hereditary diseases. It is a very fine line that

separates transmissible conformation from transmissible disease, and each case must be judged by itself.

Corns are certainly not hereditary; they are only bruises, but most likely to occur in broad open feet.

Sandcrack.—If one sandcrack is seen in a foot, the horn of which appeared of good quality, I should not think sufficient evidence existed to warrant me in saying it was likely to be transmitted. If sandcracks in two or more feet were found in conjunction with a hard, dry horn, I should give an opposite opinion.

Laminitis.—No horse suffering from Laminitis is likely to be submitted to veterinary examination. We may, however, be called upon to express an opinion as to feet which have been altered in form as the result of that disease. A flat sole is a conformation probably transmissible; a convex sole is a change of structure due to disease. Is it likely to be transmitted? Would the foal of such a parent have convex soles, or would it be specially liable to Laminitis? I should not disqualify such a horse if it were sound in action.

Navicular Disease.—If I were sure that a stallion suffered from this disease, I should surmise that his offspring would in due time develop the same defect. I think there is sufficient evidence to warrant us in including heredity amongst the causes of Navicular disease; but that evidence is capable of being strengthened by further observation.

Contraction.—A contracted foot is not necessarily a diseased one, nor is it to be looked upon as a predisposing cause of disease. When both feet are contracted we may generally find the cause of the defect in the shoeing. When one foot is contracted it may be the result or accompaniment of disease, but it may be congenital or accidental. A contracted foot, in the absence of any other sign of disease, is not, in my opinion, a hereditary disease, nor even a condition offering any evidence of its probable transmission to the offspring.

Diseases of the Nervous System.—By some authors Stringhalt is said to be hereditary; by others no such cause is given. I have no experience which warrants me in expressing an opinion, so that in practice I should give the doubt in favour of the horse.

"Shivering."—This serious, but somewhat ill-defined disease, is said to be hereditary. I have no experience of it in breeding stock. Professor Williams relates the case of a mare which suffered from "Shivering"; she had three or four colts, each of which became affected in the spine before the age of three years.

Epilepsy in Dogs.—This disease is undoubtedly transmissible, and I have known certain families, no member of which escaped. Some forms of Megrimms in the horse are undoubtedly of an epileptic character, and it would be interesting to hear any experience of the effects of breeding from animals so affected.

Diseases of the Skin.—Eczema is in man and in the dog undoubtedly hereditary. In the horse the analogous condition is not often met with, and, personally, I have no experience of it in stud horses. "Grease" is said to be hereditary by some authorities, and the same persons usually call it Eczema. I deny the analogy, and have no reason to believe that "Grease" is hereditary.

As to the value of Medical Opinion, and how it is best applied.—In private practice, our opinion may be asked as to defects in a mare. This is not likely, as the owner of an animal generally knows, or thinks he knows, whether it will pay him to breed or not. He takes the risk, knowing that few hereditary diseases become evident until after the age at which he hopes to sell.

Possibly some day it will become practicable to prevent the use of mares suffering from patent hereditary disease, or at any rate to offer advantages

for the use of sound ones. However, it is something to prevent the spread of hereditary diseases from one parent. At present veterinary opinion is only desired for the male parent, and as the example recently set will now probably be widely followed, it is most likely that our profession will be frequently engaged in giving opinions as to the soundness of stallions. As to the value of such opinion, there cannot be any question. I agree with Professor Axe in thinking that "the practice of submitting horses to veterinary inspection at agricultural and other shows, is the only reliable instrument at our disposal for checking the spread of hereditary disease." Of course such examination must be properly carried out. A sufficient time and a suitable place for thorough examination must be given; the opinion should be of sufficient weight to inspire confidence in the minds of exhibitors and judges. There will always be disappointed exhibitors to find fault, and members of our profession to back them up. This is only the result of our all being human. No man is big enough to give an opinion of sufficient weight, and therefore it is necessary to adopt a system such as Professor Axe has detailed in the *Live Stock Journal Almanac*. The Shire Horse Society determined that the inspection at shows "be relegated to a jury of not less than three veterinary surgeons, one of whom should hold, or have held, a distinguished position at one of the veterinary schools, the other two to be selected by the council of the Society from four veterinary practitioners of eminence, to be nominated by the Professor so chosen." I do not at all say that it is necessary that those chosen should be nominated by the "Professor," and I think that in all local shows local veterinary surgeons should form the majority of the men employed. In some cases it may be possible for veterinary examiners to say that defects found in a stallion are hereditary; in many cases they will only be able to say that they probably are. In some cases the defects found will only be of slight importance, even if they should be transmitted. It is not impossible that some peculiarity may some day be met with about which the veterinary surgeons will differ, and be able to obtain any numbers of backers on both sides. Under these circumstances, I consider the veterinary opinion should not be decisive. It should not be a judicial sentence upon the animal, but only expert evidence to assist the judges, who have also the evidence of conformation, and perhaps absolute performance, to assist them in finally deciding. If the shows adopt the example set them by the Nottingham Show, I should think that they would render their work valuable, and get as much out of it as possible. If they adopted some sort of system of registering not only the result of the veterinary examination of the stallions, but also of the produce; if a book were kept in which the result of such animals' work was registered, the judges would have in the course of a year or two evidence to guide them quite equal to the veterinary opinions which they might get upon the stallion. It has been asked if it is right to condemn a great good horse for one hereditary unsoundness, whilst you honour "a weedy brute" with a certificate of soundness, and perhaps a prize. I do not think it at all likely that a weedy brute would be awarded a prize, and if it were, the fault would lie not with the veterinary surgeons, but with the judges. If a great good horse suffered from an undoubted hereditary defect I should certainly think that he should be rejected. If his owner could be bullied or bribed into having him castrated, so much the better. He might make a grand horse for harness or saddle work, but he is certainly not in his proper place at the stud. There is one more quotation to which I should like to draw attention. Professor Axe says, "Out of show-yard inspections I believe a plan may be devised offering a very near approach to the licensing system. In this connection I would suggest that all stallions four years old and upwards exhibited at our shows, whether drawn for a prize or not, shall be examined by at least two veterinary surgeons, and in the event of their being found

free from hereditary disease, a certificate to that effect shall pass to the exhibitor, signed by the same, and stamped with the seal of the Society. These should be known as certified stallions and divided into three grades; four-year-olds representing the third grade, five years old the second, and six years old the first grade." The only objection that I see to this would be that, if taken simply as stated by Professor Axe, any man who had a stallion, the ugliest, commonest brute on the face of the earth, would put him into the show, not to get a prize at all, but to get one of these veterinary certificates that he was free from hereditary disease. I think that possibly you might come across an animal that it would be as advisable to have castrated on account of its conformation as though it suffered from a large number of developed unsoundnesses. Therefore I should propose that these certificates should be confined to horses "highly commended" by the judges.

Following Professor Axe, again he says, "I am not sure how far it may be practicable to extend this distinction to mares, but if it could be done I feel satisfied that it would in time work incalculable good."

Now before I thought very much about this subject, I imagined that the question of the mares had been overlooked, but I am not at all surprised at officials not tackling the mares. When you look into details, how are you to do it? There is one thing that ought to be done, and I do not see why it should not be, and that is that all owners of subsidized horses should be allowed to refuse mares that are known to be suffering from hereditary affections. I suppose that when a subsidized horse goes into a district the owner is obliged, when the money is offered him, to allow the services of his horse. This is extremely unfair to the animal, and it is more unfair if the Society keep account of his progeny, because he may be obliged to use his horse to unsound mares, and then get credit afterwards for it being the father of unsound offspring. By giving the owner the option of being able to refuse unless the owner of the mare can produce the certificate of two veterinary surgeons that the mare was not suffering from hereditary disease, I think that help would be given, at any rate in a small way, towards putting a stop to some of the hereditary diseases transmitted by the female.

MIDLAND COUNTIES VETERINARY MEDICAL ASSOCIATION.

(Continued from page 370.)

Digestibility of Foods.

While it is necessary that food should possess a large percentage of albumenoids and carbo-hydrates in due proportion, their digestibility is a matter of equal, or even greater importance. For information on this latter subject we are much indebted to German experiments. The principal conclusions arrived at have been embodied in the "Chemistry of the Farm," by Warrington. Amongst other results, these experiments show the relative digestibility of various food stuffs by different classes of animals; also that the digestibility of a given food by the same animal may be sometimes considerably increased by the addition of an article rich or poor in the particular constituents deficient or abundant in the food in question. Thus the digestibility of potatoes, which are particularly rich in starch, will be increased by supplying along with them a nitrogenous article, such as bean meal, etc., and *vice-versa*. In this way a judiciously mixed diet will usually give the most satisfactory results.

The digestion of the various food stuffs by horses is shown by the following table, which gives some of the results of the experiments before mentioned:—

Food.	Proportion of each constituent digested for 100 supplied.				
	Total Organic Matter.	Albu- menoids.	Fat.	Soluble Carbo- hydrates.	Fibre.
Pasture Grass	62.1	68.8	13.4	65.8	57.0
Meadow Hay, good ...	51.7	64.3	23.5	56.9	42.6
Ditto do. ordinary ...	46.3	58.4	18.8	51.7	37.3
Lucerne Hay	57.9	74.3	3.2	70.2	39.0
Oats	72.0	87.0	78.2	76.6	25.6
Beans	87.4	86.2	8.5	93.4	69.3
Maize	90.9	77.6	63.0	93.9	100.0

The marked superiority here shown in the digestion of grass as compared with that of hay is a striking fact which will be again alluded to in the detailed reference to food stuffs. It is also highly important to notice the more perfect digestibility of the legumes and cereals relative to that of either grass or hay. In the total of digested organic matter, maize stands at the head of the list; while in digested carbo-hydrates it is equal to beans, and superior to oats. It will be seen, however, that in digested albumenoids maize is inferior to both oats and beans.

Relation of Food to the Horse and his Work.

In horse feeding both the horse and his work have to be considered, and due allowance made for the kind, quantity, and quality of the food to be used. It is obvious then that no fixed diet can be made, either in the quantity used, or in its albumenoid ratio. The requirements of the horse vary with his class. His food must be directly proportionate to his work. As one horse will do more work than another, so the quantity sufficient for one will be insufficient for the other; so also the food required by a horse doing moderate work will be insufficient for the same horse doing hard work; neither should horses doing fast and slow work be fed alike, the former requiring a more nitrogenous diet than the latter. Again, young growing horses, or horses in low condition, will naturally require more food than horses fully matured, and in fit condition, and as the work varies with the season of the year, so will the food have to vary. But as an average diet can be made for men at similar occupations, so can an average diet be made for horses. Thus if ten horses in one stable be doing similar work to ten horses of like weight and condition in another, an equal allowance of food may with all safety be apportioned to each stable. No large bulk of innutritious food will make up for a lack in quality, and no highly concentrated one, however rich, will compensate for a deficient quantity. Hay usually and straw occasionally provide the requisite bulk, as well as a portion of the nutritive materials. Large quantities of innutritious provender overload and derange the digestive organs, and are particularly inapplicable for horses on account of their small stomachs. In regulating the food allowance, a careful and intelligent man will readily notice any necessity for an increase, or the utility of a decrease; but in addition he ought to take due notice of the albumenoid ratio; thus although horses doing moderate work will maintain condition on oats, it has been frequently shown, and among horsemen is universally acknowledged, that if horses have to undergo long-continued severe exertion either at slow, or fast work, *oats alone* are incapable of supplying the nitrogenous matters required to replace tissue waste; and that a horse continuously doing such work will lose condition, and deteriorate if fed with them alone; but if his food be

made more nitrogenous by the addition of such an article as beans, then the same horse, doing the same work, will regain his lost condition and fitness. As with oats so with an equivalent mixed food, such as a mixture of 4 lbs. maize and 1 lb. beans. This mixture will maintain a horse doing moderate work, but in itself is unable to supply the necessary materials for real hard work; but if with this, as with oats, the percentage of nitrogenous matter, in other words its albumenoid ratio, be increased, as by the addition of a sufficiency of beans, the requisite food may be obtained to supply the wants of any horse for any work he is capable of performing. Economic feeding, in other words the giving of such provender as will maintain the horse in the best condition and obtain the greatest amount of work at the least possible cost, may be achieved by the use of a food consisting of a mixture of oats, maize, peas, beans, barley, hay, etc., the mixture varying in its proportions from time to time as the prices of the articles composing it fluctuate in the market, provided always a due albumenoid ratio be maintained.

Having briefly touched upon the relation of the different classes of food with regard to the principles of feeding, we may now proceed to the consideration of the various food materials in somewhat greater detail.

Green Food.—It is highly advantageous to give a proportion of green food during the season, in the form of clover, rye, grass, or vetches. The safest and most economical plan is to cut it up and give it amongst the ordinary chaff, but where impracticable to cut it frequently, the green food may be given separately: we have more frequently given it in this way than any other, our usual plan being to begin with a small quantity for the first day or two, afterwards increasing it to the regular allowance. If large quantities are given when wet with dew or rain, it is liable to produce flatulence or purgation. This is also sometimes the case with newly-mown very succulent grass grown on water meadows, or on sewage land. The use of green food is not only a most agreeable and beneficial change, but is also an economical one.

Hay.—As we have already indicated, hay is an essential element in our system of horse feeding. It is therefore necessary for those who have to use it to be able to discriminate between good and bad hay. Among practical men it is universally acknowledged that there is a wide divergence in the nutritive value of different samples. Meadow hay differs from rye grass hay, and clover hay from both, but the time and manner of harvesting influences its feeding properties to as great, and in many cases to a much greater extent, than do the different grasses and clovers of which it is composed. We also find the quality largely depends upon the soil on which it is grown, and is affected by the character of the manuring. The relative value of hay cut at different stages of maturity has recently been the subject of much scientific investigation, and in this field of research we are again indebted to the Germans. British Agricultural Scientists have however also turned their attention to the subject, and in an able paper by Mr. Wilson, of Stirling, published in the Highland Society's Transactions for 1886, he clearly shows that there is a far wider variance in the chemical composition of the same grasses cut at different stages of development, than between different varieties of grass cut at the same stage. The general conclusions arrived at are, that as the plant matures, the proportion of water, nitrogenous matter, fat, and ash decreases, while the proportion of carbo-hydrates increases. Now as albumenoids are much more valuable than carbo-hydrates, and the greater the percentage of albumenoids in a given sample of hay, the more easily and perfectly will it be digested—it follows that as the plant grows older, its nutritive value is not only diminished, but also its digestibility. This partly explains the reason why animals should fatten so much more readily when fed on grass alone than on hay alone. Hay that in making has suffered much from rain and exposure, and has also undergone fermentation, contains much

less soluble matter than when well made, and is deteriorated accordingly; while hay carried too soon, and unduly fermented or mow-burnt, not only loses in value, but may in addition cause derangement of the digestive and urinary organs. The influence of soil and manuring on hay is universally acknowledged; many farms being noted for the feeding nature of their grass, others having an unenviable notoriety for growing herbage of an inferior quality. On good soils, grasses such as cocksfoot, timothy, rye grass, meadow fescue, smooth and rough meadow grass, foxtail, etc., usually predominate; on the other hand, on cold wet soils, we find water meadow grass, oat grass, quaking grass, couch grass, sedges, rushes, and also sorts of weeds to a greater or less extent. In the selection of hay we have therefore to see that it has been harvested when in bloom and has not run to seed; that while harvesting no unnecessary exposure has taken place, nor undue fermentation in the rick; also that a preponderance of good grasses be present.

Good hay is of a bright and greenish tint and pleasant odour, has a firm crisp feel, tough flexible stem of medium length, with heads showing inflorescence, and any seeds present firmly adherent to the spike. All bleached, brittle, mouldy, bad-smelling, or highly-fermented hay should be rejected, but if only slightly fermented a truss or two cut up with other hay seems to give the whole an agreeable and palatable flavour, and produces a distinctly appetising effect. Clover hay should be bright, firm, and flexible, free from mould and dust, and have most of the leaves adherent to the stem.

No new hay should be used before November. Prior to then it has not the feeding or conditioning effect of old hay; and besides, is more liable to produce digestive derangement.

I cannot unite with those who praise the superiority of rye-grass and clover hay over good meadow hay. In practice we find that a horse will consume a greater weight of the former than the latter, to maintain a like condition and do the same work.

Straw.—Straw is frequently cut up to a limited extent with hay. For this purpose good oat straw is decidedly superior to wheat-straw, but the latter is said by good authorities to be the best fodder for horses with defective wind. Chaff made from soft hay is improved by a slight addition of straw, and when so mixed most horses eat it more readily. Whether wheat or oat-straw be used it should be bright, dry, sweet, and free from weeds, but, however fine the straw may be it will be inferior in nutritive value to good hay.

Bran.—Many people use bran regularly amongst the horse food, especially where only a limited stud is kept, but its value as a food bears no relation to its cost. From its appetising, corrective, and laxative properties, it is given with benefit to horses off work from any cause, and frequently we find sick horses retain a certain appetite for it after they will scarcely look at any other kind of food. This is not the case with all, for we occasionally meet with horses that will barely taste bran under any circumstances. Alone, or better still in conjunction with linseed, bran makes a capital mash for Saturday night. Indeed, instead of following the custom of giving various medicaments, usually classed as alterative medicines, it has been our custom for years to give every horse under our care a linseed and bran mash every week end. To this, and to the fact that our usual daily allowance of provender is regularly reduced on Sundays, I attribute the practical immunity of our stud from Colic and Lymphangitis.

Linseed.—Linseed is frequently lessened in value by having an admixture of various kinds of seeds. It should be clean and sweet, have a bright colour, and be of uniform size. It is rarely used regularly as a food, but is chiefly given to invalids, especially to those suffering from throat, chest, or kidney affections, in the form of tea or gruel, or along with bran in mash. For unthrifty, hide-bound horses, and horses with defective digestive powers, it

may be used with beneficial results in the raw, uncrushed state, mixed with the food.

Beans.—The beans in common use are either English or Egyptian. The former are usually preferred, but they have been largely replaced by the Egyptian, which are cheaper. If their price were the same, I should prefer the English, partly, probably from prejudice, and partly on account of their slightly more agreeable favour. In practice it is very difficult to detect any material difference in their feeding value, and this most certainly bears no relation to their difference in market value. It has been our usual custom of late years to give the beans mixed in the proportion of 1lb. of English to two of Egyptian. Whichever kind is used they should be old, sound, dry, and clean, and not less than 60lbs. to 64 lbs. per bushel in weight. Beans are far too nitrogenous to be given for any length of time alone, but they are very valuable in mixture, and are the usual means by which we increase the albumenoid ratio of food deficient in nitrogenous matter.

Peas.—Peas frequently replace beans. As already shown, they have much the same proportion of nitrogenous constituents as beans, and are only very slightly inferior to them in feeding properties. When feeding with them we generally replace 1lb. of Egyptian beans with 1lb. of old Canadian peas, thus making a mixture of 1lb. each of English beans, Egyptian beans, and Canadian peas. Peas are often accredited with producing flatulence, but they only do this if used in excess, or if new or soft in condition. Like beans, they should be old, hard, sound, sweet, clean, and free from weevils.

Oats.—Oats have been for long looked upon as the grain, *par excellence*, for horse food, and if the choice be limited to one kind of grain this opinion is undoubtedly correct. This is not only proved by the test of practical experience, but also verified theoretically by their chemical analysis, which shows oats to possess the chief food constituents in better-balanced proportions for the horse's requirements, than any other single grain used for horse food. But although oats are superior to the other grains separately in this respect, in a former section we have endeavoured to show that *they* may easily be improved upon, and a mixture readily obtained containing the requisite constituents in a more justly proportioned ratio than oats do.

In the selection of oats more skill and experience are required to obtain the best value for the money spent, than any other grain used for feeding purposes. Not only do we find a wide range in the amount of husk present, which may vary from 28 per cent. to 38 per cent., but it is not unusual to see short, plump, bright-looking oats, highly inferior to ordinary medium-sized ones of indifferent colour, inasmuch as the former may be soft, new, or bleached, and possess a fusty or sulphured smell, whereas the latter may be old, sweet, unbleached, and in good hard condition. It is immaterial whether oats be white or black; they should be of uniform size, heavy, not under 40lbs. per bushel, clean, hard, and sweet; while all soft, new, bleached, kiln-dried, or musty oats should be rejected.

Barley.—Samples of barley also differ widely in character. The finest ones are too expensive for horse food, but those of good medium quality may often be obtained at a less cost than any other feeding grain. If used to any extent it is said to produce irritation of the digestive organs and skin. We have frequently given it in varying proportions up to one-fifth of the whole bulk of corn, and never saw any bad results. Possibly its deleterious effects may be produced when used in larger proportions.

Maize.—Maize has been largely used as an article of horse food for at least twenty years. Lately its use for this purpose continues to increase. Unaided it will maintain cart horses, if not very severely worked, in fair condition, but it is too deficient in nitrogenous matter to form a good food alone, and should always be given mixed with peas or beans. The varieties in use are

round and flat. It is immaterial which is given, provided they be old, sound, perfect corn, and if both round and flat possess these qualities, price may be our only guide. It has been already shown theoretically that a mixture of maize and beans of equivalent feeding value to oats may be easily obtained. This, it is to be distinctly understood, only refers to the feeding of mature animals, as the small percentage of ash present in maize renders it unsuitable in large quantities for the feeding of growing stock. And if due attention is paid to this exception, I am of opinion that the statement is not only *theoretically*, but *practically* true. This statement may not be accepted by many, but I have no hesitation in making it, and do so after ten years' practical experience in horse feeding, with the full conviction of its accuracy. During this time I have used maize and oats concurrently with each other, mixed with beans in various proportions; and increased experience simply strengthens the opinion here given. Prior to 1878 I was as keenly opposed to, and sceptical of, the value of maize feeding as any man could be—considered it useful for the production of fat, but incapable of supplying the wants of hard-worked horses, forgetting that the only constituents to be considered in horse food were the fat-formers and flesh-formers; that if the former was present in superabundance in maize, so was the latter in beans, and therefore all we had to do was to bring the knowledge derived from chemistry to bear on the mixture of our horse food, and try this by the test of practical experience. As before stated, practice in this case has amply vindicated theory.

In discussing horse feeding it is not infrequent to hear men—aye, even veterinary surgeons—assert that oats, or oats and beans, are the only food fit for horses. Such remarks can only proceed from an imperfect acquaintance with the scientific principles of feeding. On hearing them I have sometimes wondered if the same people would maintain that oatmeal in one or other of its forms was the only food fit for man. If confined to it they would in all probability soon wish a change. When doctors draw up a table of dietary, they consider the albumenoids, fat-formers, and ash; and if these are in sufficient quantity, in due proportion, and digestible, they do not object whether these constituents are in buttermilk and potatoes, oatmeal and milk, or roast beef and plum pudding. As with man, so with his servant the horse, the more varied his food the more completely will it supply his requirements, provided always the afore-mentioned conditions be maintained, the food be in the right physical condition, and possess no deleterious properties.

At a recent meeting of the Association, when discussing maize, a member objected to its use for horse food on the ground that maize feeding occasionally produced Grease. Now Grease is frequently seen where no maize is used for food, and in predisposed animals may occur on any food, especially if used in excess. My own experience is entirely opposed to this objection, as in a stud of 270 horses which I have the honour to superintend, and which from the accompanying statement you will see have been largely fed on maize, only *two* cases have been seen in *seven years*, and one of these was suffering from it before the introduction of maize feeding. Whatever be the fault of maize feeding when used alone, admirable results are obtained in conjunction with beans and oats in due proportions, and I shall have much pleasure in demonstrating this to any member who has the time and may be willing to inspect our stud; and feel confident their opinion will be that horses in better condition or more free from Grease or any skin disease, it would be practically impossible to find.

Shortly since a firm trying to be economical commenced to use a food principally consisting of new maize and peas, and when the only results that could be expected followed, viz., loss of condition and fitness, together with the occurrence of cases of gastric derangement, the use of maize was thrown

up in disgust, and a return made to the exclusive use of oats, with the attendant consequence of an increased cost in the provender bill; and so the disparagement and condemnation of maize feeding follows, instead of that of the parties responsible for its use, who must have been ignorant of the principles of horse feeding. I need scarcely say it is not by such haphazard means, but by the practical application of scientific principles, that great economic results have been achieved. As with most other problems, so with the study of true economic feeding, success is the reward of, as it is merited by, combining practice with science; and as Mr. Goschen aptly puts it, "Nothing can be more deplorable than that men who have to deal with economic problems should be, as is too frequently the case, divided into theorists who have no knowledge of practical details, and practical men who shrink from or despise the study of general principles."

Water.—A sufficient supply of pure water is essential for the maintenance of health, and if it is frequently and regularly given, the horse himself will usually be the best judge of the quantity he requires. To ensure a constant supply, many people from time to time have had water-troughs placed in the stable alongside the manger, but in the majority of these cases this plan has been discontinued, and the old system of supplying the water, either in a common trough or by bucket, returned to. The cause of failure has been the proximity of the water to the corn: as a consequence, food gets into the water and water into the food; acid fermentation supervenes amongst the unconsumed provender, which if thrown away is so much waste, and if eaten is liable to produce digestive derangement. This difficulty would be done away with by having stables fitted with loose boxes instead of stalls, with the water-trough fixed at one end of the box, and corn-manger at the other. We have two stables, containing eighteen horses each, in boxes, where a constant supply of water has been provided for the last four years, with the best possible results, and the entire banishment of such complaints as Colic, Indigestion, or Impaction. If water be deficient there is not only imperfect elimination of effete material from the system, but the digestion of the food is interfered with, and Impaction of the bowels not infrequent. I may be permitted to mention a well-marked case of the latter. A horse worked by B—— had several attacks of Colic, with Impaction, from which he ultimately died. The next horse B—— had was also subject to Impaction, but was disposed of in 1884 on account of an accident. The third horse, driven by the same man, was similarly attacked. Feeling now assured that the fault lay with the man, he was pressed on the question of watering. Ultimately he admitted its irregular supply. He was then told his dismissal would follow the next case of Impaction; since then three years have elapsed without a single recurrence.

The supply of water should be limited or withheld for a time when horses are excessively heated, also when stabled after doing a hard day's work in particularly cold weather. In my opinion, neglect of this precaution, especially in the latter case, is a more fruitful source of Chill and Congestion of the lungs than any other. The necessity of giving water before food, except in the instances just mentioned, will be readily admitted when the small size of the horse's stomach is borne in mind. If water be withheld until after feeding, it is in most cases almost physically impossible for both food and water to be retained in the stomach, consequently a portion of the food is carried into the intestines undigested, where, besides being a loss to the animal, it is a source of evil.

The importance of water being pure, and free from organic matter, is so universally acknowledged that I may be excused from discussing it on this occasion.

Preparation of Food.—It is now generally conceded that cooked food for

working horses is a mistake. We have already indicated that oats, maize, &c., are characterised by possessing a particularly large percentage of digestible carbo-hydrates, consequently, the more perfectly these grains are masticated and mixed with saliva, the more perfect will be their digestion. Now, although a certain proportion of the undigestible fibre of food be rendered digestible by cooking, this gain is more than counter-balanced by the loss through the food being swallowed without much mastication, and only partially mixed with saliva; besides this, horses fed on cooked food are soft, and in less fit condition than those fed on raw food. No one would think of giving a hunter cooked food, neither should a cart horse be fed on it. If heavy loads have to be moved or long journeys taken, it is essential that the horse doing so should be fit, and that his muscles should possess the requisite tone for bearing the strain upon them, and this can only be obtained on raw food. The old plan of feeding on corn and uncut hay separately, has been replaced by the much more economical one of giving corn with cut hay. Much of the grain when given alone is swallowed unmasticated, passes through the alimentary canal undigested, and is voided unchanged among the fæces. In its passage it probably produces irritation, but cannot possibly be nutritive. Long-hay feeding is particularly wasteful, and portions of it are usually trodden down and destroyed; by mixing the corn with the hay both of these evils are prevented. It is physically impossible for horses to swallow oats mixed with hay unmasticated, therefore it is optional whether they are crushed or not; we do not crush them, yet an undigested grain is never seen in the excrement. Beans, peas, and maize *should be cracked, not crushed*. The loss from animal force expended in their mastication described by some writers, in my opinion bears no relation to the gain derived by their more perfect mastication.

Horses at work should be fed at least every four hours, as, from the anatomical reasons already referred to, small, frequent, and regular feeding is much more beneficial than larger quantities at longer intervals, therefore horses out for the day should always be provided with a nose bag.

Bedding.—Straw is universally considered the best bedding for horses, but its cost and limited supply have of late years caused it to be largely replaced by sawdust and peat moss. If supply were guaranteed, and cost no object, nobody would use either of the latter if they could get the former. Sawdust is not only cheaper than straw, but is also cheaper than moss, hence we employ it almost exclusively, and during the seven years of its use we have never once seen a deleterious effect produced by it.

In conclusion, permit me to draw your attention to the accompanying statement of the actual results of feeding the Birmingham Corporation Horses, the insertion of which in this paper the Chairman of the Stable Committee has kindly sanctioned. A copy of this statement may be had by any member sufficiently interested in the matter. The tables composing it have been extracted from the Corporation Books, and their accuracy may be absolutely relied upon. It shows the average consumption of food and bedding per horse per day, and per horse per week; the total consumption for each of the last seven years: also, the actual cost of these per horse per week for each year. To show the type of horses fed, a column has been introduced giving their average weight; this is obtained from the average of two weighings each year, the one at Christmas, the other at Midsummer. Another column has been added showing the albumenoid ratio of the food actually consumed, a matter which we have endeavoured to show is of much importance in all questions of feeding; it is based on the Table of the Chemical Analyses of Food Stuffs previously given.

BIRMINGHAM CORPORATION STABLE DEPARTMENT—HORSE FEEDING, 1881 TO 1887.

Year	Average No. of Horses.	Ave. Weight of Horses.		Cost per Horse per Week.	Albumenoid Ratio of Food Consumed.	Total Corn Consumed.	PROVENDER.										BEDDING.							
							Beans.		Peas.		Maize.		Oats.		Barley.		Bran.		Linseed.		Green Food.	Hay.	Sawdust.	Straw.
							Bags	Lbs.	Bags	Lbs.	Bags	Lbs.	Bags	Lbs.	Bags	Lbs.	Bags	Lbs.	Bags	Lbs.				
1887	272'96	1,628	Total Consumption for Year ..	11 6'97	..	1,271 215	677 89	3,851 130	2,517 94	..	..	484 28	72 84	97 17	1 550 18	13,223	57 7 3	8'75				
			Per Horse per Week ..	..	132'23	.. 23'38	.. 11'55	.. 64'75	.. 28	..	..	3'50	.. 1'06	.. ..	84	..	..	8'75
			" " Day ..	..	18'89	.. 3'34	.. 1'65	.. 9'25	.. 4	..	..	..	..	..	12	..	..	1'25
1886	271'12	1,619	Total Consumption for Year ..	11 6'30	..	1,216 248	933 220	3,691 72	2,476 64	102 44	509 84	40 84	89 5 2	534 17	1 52 0 3	13,408	52 0 3	8'19						
			Per Horse per Week ..	..	134'47	.. 22'40	.. 16'59	.. 62'65	.. 27'30	.. 1'40	.. 3'99	.. 59	.. ..	.. ..	84	..	..	8'19	
			" " Day ..	..	19'21	.. 3'20	.. 2'37	.. 8'95	.. 3'90	..	..	..	..	..	12	..	..	1'17
1885	264'65	1,615	Total Consumption for Year ..	11 11'08	..	1,897 159	58 48	3,658 178	2,461 28	204 4	491 28	10 60	96 17 2	551 0 2	50 9 3	12,641	50 9 3	8'26						
			Per Horse per Week ..	..	135'52	.. 35'98	.. 1'05	.. 63'63	.. 27'79	.. 2'94	.. 3'99	.. 15	.. ..	.. ..	..	..	..	8'26
			" " Day ..	..	19'36	.. 5'14	..	.. 9'09	..	..	..	..	..	..	..	..	..	1'18
1884	261'62	1,590	Total Consumption for Year ..	12 3'38	..	1,654 216	433 200	3,320 120	2,560 67	191 152	485 392	4 25	104 14 2	531 18	58 17 1	12,363	58 17 1	9'66						
			Per Horse per Week ..	..	134'19	.. 31'78	.. 7'98	.. 58'38	.. 29'26	.. 2'80	.. 3'92	..	.. ..	.. ..	..	..	..	9'66
			" " Day ..	..	19'17	.. 4'54	.. 1'14	.. 8'34	.. 4'18	..	..	..	..	..	..	..	..	1'38
1883	238'48	1,571	Total Consumption for Year ..	13 4'79	..	1,009 110	1,302 203	1,755 211	3,698 36	324 67	410 84	3 187	121 19 2	479 14 0	64 9 1	9,558	64 9 1	11'62						
			Per Horse per Week ..	..	136'99	.. 21'21	.. 26'39	.. 38'88	.. 46'41	.. 5'25	.. 3'71	..	.. ..	.. ..	..	..	..	11'62
			" " Day ..	..	19'57	.. 3'03	.. 3'77	.. 4'84	.. 6'63	..	..	..	..	..	..	..	..	1'66
1882	234'21	1,517	Total Consumption for Year ..	13 4'68	..	474 86	1,172 156	1,815 218	3,748 64	356 48	425 28	4 49	96 0 1	442 4 2	115 4 2	9,000	115 4 2	11'07						
			Per Horse per Week ..	..	122'99	.. 10'15	.. 24'15	.. 35'63	.. 47'81	.. 5'88	.. 3'85	..	.. ..	.. ..	..	..	..	11'07
			" " Day ..	..	17'57	.. 1'45	.. 3'45	.. 5'09	.. 6'8	..	..	..	..	..	..	..	..	3'01
1881	224'08	1,528	Total Consumption for Year ..	14 1'81	..	881 162	783 ..	2,718 201	2,584 122	..	..	5 94	41 13 2	431 6 2	194 2 0	4,522	194 2 0	40'38				
			Per Horse per Week ..	..	131'32	.. 19'82	.. 16'93	.. 56	.. 34'60	..	..	..	.. ..	.. ..	..	..	..	40'38
			" " Day ..	..	18'76	.. 2'83	.. 2'42	.. 8	.. 4'94	..	..	..	..	..	..	..	..	5'64

The PRESIDENT said he should be glad to hear a discussion on Mr. Malcolm's paper after they had time to look over the tables which he had distributed amongst them.

Mr. OLVER said that looking at the sheet it was seen that Mr. Malcolm had reduced the cost, and at the same time increased the weight and condition of his horses. Generally he agreed with the essay, but demurred to the statement that oats alone did not meet all the requirements of horses doing hard work. In the West of England oats alone were used, and no peas or beans given, and he believed that oats could get horses into thoroughly fit condition. In speaking of the preparation of the food, he agreed that raw food was best, but could give many cases where delicate horses had done remarkable well on cooked food. Sufficient attention was not paid to the water supply. Many horses suffered from Colic until the water was changed. No water was so good as rain or very soft water.

Mr. TAYLOR (Manchester) said they would all admit the value of the figures placed before them. It was generally believed that maize produced Colic, but he knew places where no other grain was used; sometimes it was cracked and sometimes whole, and neither Colic nor Indigestion was seen. The daily allowance for each horse was 12 lbs. maize, 2 lbs. bran, and 14 lbs. hay. The horses were van horses, and frequently did thirty miles per day. In winter he approved of roots taking the place of green food. He should like to know whether with the decrease in cost and increase in weight of Mr. Malcolm's horses the work had decreased.

Mr. Councillor PARKER: No, increased.

Mr. HOPKIN (Manchester) said that in feeding much depended on whether it was economy or appearance that was aimed at. Beans he considered the most dangerous food for Colic and Flatulency. They should be given with great care, for in his experience they were more dangerous than peas. He did not agree with giving green food, neither did he approve of cooked food. He believed in giving water before food, except when the horse was heated. In one case, at a large colliery, the horses suffered from Colic, which puzzled the veterinary surgeons in charge. The mischief was ultimately found to be due to the chopping machine, which was provided with two or three riddles over which the food passed, and finally all that was left was the hard stalk of the hay. The riddles were removed, and linseed mixed with the food, after which no more Colic was seen.

Mr. TRIGGER complimented Mr. Malcolm on his able paper. In his experience horses were more liable to Colic when fed on Indian corn than on oats. He advocated cooked food for horses with defective wind. One mare he instanced that had hunted for three years on cooked food alone; but while giving it in such cases he did not approve of it for whole studs of horses. As to water, horses should be allowed plenty of water if good digestion was to be obtained.

Mr. SMITH, Mr. OVER, and Mr. CARLESS gave their experience of feeding hunters.

Mr. STANLEY said that in feeding, the age of the horse was to be considered, as after five years old more beans and less oats were required.

The PRESIDENT said he felt the discussion must now cease, as time was passing. He would caution all against using new oats; they led to no end of mischief. Mr. Malcolm deserved the thanks of the Association for his able paper, but it was only what they expected from him.

A unanimous vote of thanks was then passed to Mr. MALCOLM for his paper, who, in reply, touched on the matters raised by the various speakers, and concluded by acknowledging the vote of thanks.

Mr. OLVER moved and Mr. SMITH seconded that the paper be printed. Carried unanimously with applause.

On the motion of Mr. CHAMBERS, seconded by Mr. PRITCHARD, Stafford was selected for next place of meeting.

The members afterwards dined together.

YORKSHIRE VETERINARY MEDICAL SOCIETY.

THE spring quarterly meeting was held on April 18th at the North-Eastern Hotel, York. Mr. W. Lodge, Dewsbury, a Vice-President, was voted to the chair; the following members were present: Messrs. H. Snarry and G. T. Pickering, York; J. Atcherley, Harrogate; Geo. W. Carter, Keighley; A. W. Briggs, Halifax; J. E. Scriven, Tadcaster; and the Secretary (W. F. Greenhalgh). Dr. Spencer (President of the York Medical Society), Mr. Scott, M.R.C.V.S., Harrogate; Mr. FitzEassie, M.R.C.V.S., York; Dr. White, Leeds; Mr. A. G. Todd and Mr. D. Mitchell were present as visitors.

Apologies for non-attendance were received from Professor Axe, and Messrs. G. E. Bowman, F. Danby, J. Clarkson, T. Fletcher, H. Cooper, T. Thornton, A. W. Mason, Joseph Carter, and P. Carter.

The minutes of the last general meeting were read and confirmed, as also the minutes of a special meeting held in Leeds on the 12th of March.

The SECRETARY read a letter which he had received from Mr. Teal, one of the executors of the late Mr. W. Broughton, thanking the Society for the grant they had made for the benefit of the deceased gentleman's family.

On the motion of the SECRETARY, seconded by Mr. CARTER, Mr. McCarmick, of Leeds, was elected a member of the Society, and on the proposition of Mr. G. T. PICKERING, seconded by Mr. H. SNARRY, Mr. Ridley, of Bellerby, was also elected.

Mr. SNARRY nominated Mr. Best, of Thornton-le-dale, and Mr. Rickaby, of Guisbro', Mr. BRIGGS nominated Mr. Aderton, of Halifax, and Mr. GREENHALGH nominated Mr. Scott, of Harrogate, as members of the Society.

Mr. A. W. BRIGGS drew the attention of the meeting to a communication which he had addressed to the VETERINARY JOURNAL, on the subject of "The Vaccination of Puppies for the Prevention of Distemper," and which appeared in the April number of that journal. He asked for an expression of opinion from the meeting, as to whether such an operation was general or in any way beneficial, as he confessed that he had never heard of such a practice.

Mr. PICKERING said he had on various occasions performed the operation of vaccinating puppies with vaccine, when he had been requested to do so by clients, as a preventive of Distemper. He admitted that he absolutely knew nothing as to whether such an operation was a preventive, but he had performed the operation simply because he was requested to do so.

Mr. CARTER asked if, as the result of this inoculation, the typical pock had been formed.

Mr. PICKERING thought that it always took pretty well.

Mr. BRIGGS asked Mr. Pickering if he did not think it was unprofessional to perform an operation simply because he was asked to do it, although at the same time not believing in the utility of such.

Mr. PICKERING said that some time ago a gentleman who was staying in York, and was a large breeder of dogs, had told him that he always had his dogs vaccinated, because he firmly believed in it as a preventive, owing to the fact that every puppy he had had so treated never had Distemper.

Dr. SPENCER remarked that at the wish of some friends he had vaccinated three dogs, and neither of the three had been affected with Distemper. Still he could not see there was any inference to be drawn from that, and should decline to express a decided opinion on the matter.

Mr. CARTER: Might I ask you if the dogs you vaccinated showed the typical pock?

Dr. SPENCER: Yes, they showed the pock very distinctly.

The CHAIRMAN : What age were they ?

Dr. SPENCER : The pug would be four months old, the other two were young bull-dog puppies.

Mr. BRIGGS said his communication, which had appeared in the VETERINARY JOURNAL, was originally addressed to Dr. Fleming, asking him for an expression of opinion on the subject. As he had received no answer, and the communication had been published, it was evident, he thought, that that gentleman did not wish to give his opinion on it.*

Mr. GREENHALGH thought that vaccination with ordinary vaccine could be of no benefit as a preventive of Distemper. He could not see any analogy between Variola and Distemper, and why they should inoculate with the virus of one disease in order to prevent an entirely different one in all its characters he could not see. He had had some experience among young dogs, and had been a large breeder, but his experience was, that if puppies were properly treated after being taken from the mother, a very small percentage of them would be affected with the disease to any appreciable extent.

Mr. LODGE thought that, to a great extent, the prevention of the disease depended upon the feeding of the animals.

Mr. BRIGGS said, if the operation was of any benefit, the profession was ignorant as to what Distemper was, and he believed there was much to learn of this complaint.

Mr. FITZEASSIE could see a connection between the two diseases.

The SECRETARY then drew the attention of the meeting to the proposed Horse Tax, and pointed out that the medical profession were apparently going to be exempted. He would like to have some expression of opinion as to whether veterinary/surgeons should not be included in the exemption.

The CHAIRMAN thought that as the Secretary of the R.C.V.S. was taking some steps in the matter, a representation from the meeting should be made to him to the effect that the veterinary surgeons of Yorkshire considered that the profession could, in all fairness, claim equal exemption. He moved a resolution to that effect.—This was seconded by Mr. Carter and carried.

Mr. SCOTT mentioned the fact that he had been in communication with Mr. Goschen on the subject, and that gentleman had promised the matter his consideration, and that he wished to deal with it on equitable terms.

On the proposition of Mr. BRIGGS, seconded by Mr. CARTER, it was decided that the next meeting should be held at Leeds, at which Dr. Spencer, of York, has promised to read a paper on "Animal Parasites," illustrated with lantern views.

Mr. BRIGGS then proceeded to read a paper on

"Some Observations on the Recent Outbreak of Epizootic Influenza in Horses."

MR. PRESIDENT AND GENTLEMEN,—At the recent annual meeting of this Association, held in Leeds, I had the temerity to volunteer a paper for discussion to-day, little thinking at that time, how difficult and onerous a task I had undertaken to perform.

The choice of a subject for my paper I found to be a matter of great difficulty and hesitancy, and even now, that I stand before you, I am afraid

* We have no knowledge that such an opinion was asked for privately. If it had, a response would certainly have been given, to the effect that inoculation with vaccine virus would not prevent dogs taking Distemper. This has been demonstrated times without number, and was insisted upon in "Veterinary Sanitary Science and Police," in the section devoted to the disease (Vol. II.). The malady is due to contagion only, and if dogs are not exposed to infection they will not be affected.—Ed. V. J.

many of you will condemn that choice, on the ground that the subject-matter has been threshed thoroughly dry. And if I endeavour to show that such is not the case, then the onus of the task—to which I have just alluded—falls upon my shoulders; and here comes in the hesitation which one, like myself, comparatively young in the profession, must necessarily experience when venturing to expound one's views before a body of scientific gentlemen, like this, met to discuss those views.

However, in spite of these obstacles I determined to read a short paper on Influenza—Epizootic Influenza as it has recently presented itself to us in the West Riding of Yorkshire, finding its location principally in our towns and large villages; decimating the ranks of our equine friends, and playing sad havoc with the constitutions of many of the survivors.

I shall be as brief as possible, believing that far more benefit arises out of the *discussion* of a short paper than out of the *reading* of a long one. In fact, I am not an advocate for the reading of papers on scientific or learned subjects at all—so many objections are there to the practice.

The reading of a very long paper, besides being a severe task to the essayist, entails that amount of close attention, effort of memory, and severe strain of the several senses on the part of the listeners that renders it at once wearisome, incapable of being rightly followed and unproductive of good.

Again, all men are not gifted with an inflection of the voice suitable to the reading of a paper, and here again creeps in the weariness and monotony tending to reduce the value of the production as far as discussion is concerned.

All papers for discussion should, where practicable, be printed and distributed amongst those who are about to attend the discussion at least fourteen days prior to the date of such discussion. In this way only, to my mind, can an adequate and profitable discussion follow an essay.

This course is adopted by the N. V. Association. Might I suggest its practicability to this Association? Or would the expense be too great? We are always more or less pinched for time at these meetings, and I think most of you will agree with me that much of it is occupied in the *reading* of the essays—many of which are necessarily dry and tedious to the listeners. I particularly invite discussion upon this part of my paper.

I cannot allow this opportunity to pass without drawing your attention to the somewhat novel position in which we find ourselves to-day, and urging upon you all to exert, to the utmost extent, your powers of persuasion with your brother practitioners who are not already members of the Association to join our ranks. The advantages to be gained thereby are so obvious that I need not allude to them.

It is said that "a rolling stone gather no moss," but we have decided upon this migration (if I may use the word in a local sense) in the hope of upsetting that aphorism so far as it applies to us. In other words we are endeavouring to augment our ranks by taking our meetings to the doors of those who would not previously attend them.

This step is not altogether an innovation, inasmuch as it was adopted, I believe, soon after the foundation of the society—now many years ago. Why the practice was discontinued I am unable to say, but we felt at our last meeting in Leeds that the time had come when we should afford better opportunities for attendance to those practitioners who are so widely scattered over the face of this vast county. I sincerely trust those gentlemen will appreciate this movement and give us that support we are now seeking.

It was simply natural in deference to the respect we bear towards our worthy President that we should decide upon York as the venue of our first meeting, and I think I may be excused in saying that York may congratulate itself upon the honour so conferred upon it.

Apologising for this digression I will at once go back to the subject-matter of my paper.

Firstly, then, allow me to say that I object to the nomenclature of this disease. There can remain no doubt in the minds of observant practitioners that under the term "Influenza" we include a *class* of diseases rather than an individual and particular complaint.

Its complications are so numerous and varied that I think it is high time for a close investigation to be made with a view of differentiating the various phases, and giving to each phase a correct and isolated title.

Personally, I dare not venture upon this step ; but I would strongly recommend the adoption of the suggestion thrown out by Prof. Axe at the July 1884 meeting of the National Veterinary Association held in the Victoria University at Manchester.

In the discussion upon Influenza Prof. Axe said—"Whilst I have been sitting here, I have thought that a large amount of labour and time might be spared if, instead of going over the old track, over and over again reiterating statements made by our forefathers, we were to appoint a committee of investigation on the subject of Influenza. If we were to open an inquiry on a scientific basis, we should not then, as Mr. Taylor has said, be in the dark on the question throughout all time. If the matter were carried out in a proper spirit, we should disperse those clouds of obscurity which prevent us arriving at fixed conclusions."

So far as I know, this suggestion made by Prof. Axe was not adopted ; yet I know of no other association than the National Veterinary Association more capable of carrying out that suggestion to a definite and profitable end.

So far as the history of Influenza is concerned, I need say no more than that since 1727 it has raged at various periods of time and in varying severity, both as a sporadic and epizootic affection, throughout the length and breadth of Great Britain.

I come now to what is by far the most important part of my subject, and that is the nature and causes of the disease. And here I wish you to bear in mind that I base my remarks upon the recent outbreak of Influenza, as we have observed it—I believe in almost all parts of Yorkshire. If Influenza has a typical form, surely this outbreak, *par excellence*, afforded every possible opportunity for research.

If I were asked for a definition of Influenza, I should say that it is an infectious fever, affecting animals of all ages, whether placed under the operation of the most rigid dietetic and sanitary laws, or housed in badly-ventilated and badly-drained stables, and poorly and improperly fed. It affects indiscriminately animals of both sexes, whether they be the property of the highest aristocrat or the poorest huckster, and is noticeable by a sudden nervous depression ; a marked increase of internal temperature and congestion of either the respiratory or digestive (often both) mucous tracts. These appearances are varied according to the particular phase of the disease with which the patient may be affected. Sometimes there is marked congestion of the lungs, at others pneumonia, pleurisy, serous exudation, bilious complication, and either diarrhoea or constipation.

Now, with regard to the causes in operation for the production of the disease, I desire you to take notice that in defining Influenza I did not make use of either of the terms *specific* or *contagious*.

I have come to the conclusion that the recent outbreak was neither specific nor contagious. I take it that a specific disease must have a specific and tangible cause, must run a specific course, and terminate in one or more specified ways.

I draw a distinction between infection and contagion, and I will tell you why I believe the disease to be infectious and not contagious.

During the recent outbreak I noticed that for the most part, where a large number of horses were congregated together (and of course offering the best field for investigation) the disease laid hold of those animals simultaneously, and not consecutively, as would be the case in a specific and contagious malady—as witness, *e.g.*, Small-pox.

I have also noticed that not only were the animals in any given stable attacked together, but that a great number of the horses of the whole district, covering a radius of two or three miles, were affected concurrently, and in the same manner. Does that point to a specific and contagious malady?

Moreover, I observed that very few of the cases ran the same course, but on the contrary, as I have pointed out, in one patient catarrh of the head and throat would be the predominating feature, whilst in another acute lung congestion; in another pneumonia or pleurisy, whilst in another congestion of the liver would be most marked.

Again, I have seen convalescence take place in one patient in forty-eight hours, in another a week, whilst in a third two or three weeks would elapse, and so on.

Most contagious diseases can be induced by inoculation. Where is the evidence of Influenza so produced?

A specific, unlike a sporadic, disease cannot have its course materially arrested. Yet how often have cases occurred during this outbreak where, on first visiting the patient, the temperature has been as high as 107° Fahr., and by the judicious use of diffusible stimulants, and other general attentions, the thermometer has registered twenty-four hours afterwards 102° Fahr., or even a degree less than that, and the animal has been able to resume work in a few days. Are these cases of coincidence, or are they true instances of arrestation of the disease?

Again, I observed that the epizootic, after some two months' residence with us, vanished as rapidly and mysteriously as was its advent. Unlike most specific and contagious diseases, it was not overcome by veterinary, sanitary, and hygienic measures, slowly, and by degrees, but the cases dropped off the visiting-list as suddenly as they had appeared upon it a month before.

I maintain that all these facts point to one conclusion, that the atmosphere is the medium in which the virus, whatever that virus may be, is conveyed. If the virus were conveyed by water or food then would the disease be localised and easily traceable.

I am of opinion that, so far as this outbreak is concerned, the cause lay in some peculiar, yet undefinable, condition of the atmosphere, in all probability produced by the protracted drought of the preceding summer and autumn months. At any rate the disappearance of the disease coincided with the coming of the dry frosty weather, and it disappeared in such a manner as left little doubt in my mind that the infective material was in the air.

Now, I know that these arguments and convictions of mine are not those of very many of our highest veterinary authorities, yet I believe I have expounded the views of such practical men as Professors Pritchard and Williams and many others.

Many of you are probably better acquainted with the details of the recent outbreak than your humble servant; most of you must have come in direct contact with it, and I want you, in the discussion to-day, to put on one side, as far as possible, the views and opinions of other men and argue the matter as you, yourselves, have observed it.

I promised to be as brief as possible, and I feel sure I have said enough to rouse a fairly good discussion.

With regard to the pathology, treatment, and morbid anatomy of the malady; well, I feel that these are generally accepted, and practised as laid

down in our text-books, and I do not propose to enter into them further than to remark that I am a strong believer in diffusible stimulants, and I almost invariably give 2-dram doses of Ammon Carb., in the drinking water every eight hours for the first day, modifying the dose as soon as advisable. If there is chest complication I apply a strong mustard plaster to the walls of the thorax, or, in preference, where practicable, hot blankets. I also administer, where indicated, doses of pot. nit. and magnes. sulph.

I am a great advocate for the administration of milk, beef tea, eggs, port wine, etc., in cases of severe prostration, and have seen this practice followed by the best results.

It is bad practice, however, to forcibly drench your patients, more particularly where chest complications are present; in one case the patient fell down and died almost immediately from suffocation.

Carbonate of Ammonia may be given in the drinking water, the patients being so feverish that they readily drink anything cold.

In conclusion allow me to thank you for your kind attention and indulgence, and to say that if I have contributed matter worthy of discussion, I am well satisfied.

Mr. CARTER said he had listened with great pleasure to the paper, but for himself he failed to see how the disease was infectious and not contagious. He had had many cases of Influenza in his practice during the spring, and found the disease commenced usually with horses that were travelling from Keighley to Bradford, Halifax, Leeds, and other large towns. Horses so travelling contracted the disease from others they met on their journeys, and on returning home the disease spread to other stables in the vicinity. He believed it depended greatly upon the condition of an animal's constitution as to whether it took Influenza from another animal, and although he had known cases where every animal in a stable had not been infected with the disease, surely that was scarcely an argument to bring forward in proving that the disease was not infectious. He thoroughly agreed with the treatment laid down by Mr. Briggs.

Mr. PICKERING agreed with Mr. Briggs in some of the ideas he had propounded, but not in others. He believed Influenza was both an infectious and contagious disease, and that in some cases atmospherical influence played a not unimportant part, though he had found the disease to exist in badly as well as first-class ventilated stables. Age, he considered, was immaterial, as he had seen it in animals of all ages, from three to twelve years. He mentioned a case in which all the young horses on a farm contracted the disease, but, strange to say, not one of the cart-horses, although stabled but thirty yards distant, was affected. The temperature he found varied from 104 to 107 degrees. He remembered no case in which the bowels were affected.

Dr. SPENCER said the paper they had heard was extremely suggestive, not only with regard to the Influenza disease; it raised very wide questions. Mr. Briggs objected to the name Influenza as being an erroneous one, but he thought the great thing was that they should understand thoroughly what was meant by the name given to a disease, whatever it was. Influenza was a disease which prevailed epidemically, such as Small-pox had recently done in London, Leicester, Sheffield, etc. It occurred in waves.

Mr. SNARRY had found in many cases that the bowels were affected, and said that he had administered doses of linseed oil with the greatest possible success.

The CHAIRMAN objected to the use of linseed oil in cases of Influenza.

Mr. ATCHERLEY expressed a similar opinion.

Mr. GREENHALGH said the form Influenza had taken in Leeds, so far as it had come before his observation, was no discharge from the nostril, very

little from the eyes, no cough. To every one of the animals treated by him during spring he had given a pint of linseed oil as the first dose, and he had not lost a single animal. Influenza took so many different forms that it required some discrimination as to the course of treatment.

Mr. FITZEASSIE differed from Mr. Briggs when he stated that Influenza in some cases ran only three or four days. He found in every case some disturbance for a week at least. With regard to the linseed oil treatment, while not pledging himself to agree altogether with it, he could not see that it could do any possible harm. He considered the disease was epizootic. He had known cases on a farm where one animal had been affected, then another, and three or four months elapsed before the next case occurred. If that was due to atmospheric causes, it lasted a long time.

Mr. SCOTT liked the idea of giving oil, and had found its use of great benefit.

It was then decided to postpone the further discussion of the paper to the next meeting.

Mr. CARTER proposed "That in future any paper which is to be read before the Yorkshire Veterinary Medical Society shall be printed at the expense of the Society, and that the Secretary be requested to forward a copy to each member a fortnight or ten days before the date of the meeting." He said he had been induced to move the resolution owing to the difficulty and inconvenience of expressing an opinion on a subject at such short notice, and of the unnecessary labour entailed in making notes as to the various matters touched on by the compiler of a paper in the course of the reading. He understood the cost of printing would not be great.

Mr. BRIGGS seconded the resolution, which was carried unanimously.

A vote of thanks to the Chairman closed the proceedings.

THE WESTERN COUNTIES VETERINARY MEDICAL ASSOCIATION.

THE fifth general annual meeting of the above Association was held at the Rougemont Hotel, Exeter, on March 29th, T. Oliver, Esq., the President, in the chair. There were also present: Messrs. W. Penhale, Holsworthy; J. A. Collings, Exeter; A. C. Stewart, Cardiff; A. J. Down, Stafford Peverell; C. H. Golledge, Sherborne; J. P. Heath, Exeter; A. H. Oliver, Devonport; S. Burton, Torquay; C. Parsons, Launceston; G. H. Elder, Taunton; and the Secretary. Apologies for inability to attend the meeting were received from Messrs. W. P. Chase, R. Ferris, C. C. Hoadley, T. Endle, R. E. L. Penhale, and J. H. Penhale. Mr. A. E. Michell, St. Austell, was proposed a new member of the Association.

The Secretary and Treasurer's annual report showed the Society to be gaining ground, both financially and numerically as regards members.

Mr. J. P. HEATH, on being unanimously elected President for the ensuing year, said he was the oldest member of the profession present. During his term the duties of the office should be carried out to the best of his ability.

Messrs. J. A. Collings, T. Oliver, C. Parsons, and H. W. Thomas were elected Vice-Presidents. Messrs. Penhale and Elder were re-appointed Secretary and Treasurer.

The PRESIDENT then called on Mr. A. H. Oliver to read his paper on

SWINE FEVER.

Mr. OLIVER said—It is not my intention to enter largely into the history of the disease or its pathology. It is now a generally recognised fact that Swine Fever is caused by a micro-organism, but the exact species of the bacterium is still a subject of controversy among pathologists. Some two years ago I had the privilege of witnessing this disease largely in the county

of Wiltshire, where, at certain periods of the year, more particularly during the summer months, it seems to take an epizootic form.

Swine Fever may be defined to be a highly contagious and infectious disease of a febrile character, common to Great Britain, Ireland, and America, and known under a variety of terms—Red Soldier, Blue Sickness, Measles, Pneumo-Enteritis Contagiosa (Klein), and in the county of Wiltshire as Pig Fever; in America under the names of Hog Cholera and Intestinal Fever.

In dealing first with the causation of this disease, it has been held by some authorities to arise from contagion and infection only, and that no amount of bad management, filth, want of drainage, or decomposing food are sufficient of themselves to induce it. Now, gentlemen, that it is a highly contagious and infectious disease I am quite willing to admit, but that bad sanitation, want of drainage, and decomposing animal matter do not play important factors in bringing about a disease which, although I dare not state to be the so-called Swine Fever, must, however, be pardoned if I confess that I have been at times entirely at a loss to account for the origin of a disease which, although to call Swine Fever would be altogether at variance with the latest scientific research, has seemed to me, however, to resemble it very much, both in its clinical features during life and its pathological appearances after death.

It has very often struck me on going to a farm and finding pigs presenting all the symptoms of this disease, and on inquiry of the owner have found that these pigs have been bred on his farm, that no fresh pigs have been brought to his place, and never recollects it to have occurred in his part of the country before; I have been led to ask myself the question, How can this possibly have been brought about? And although quite willing to admit the possibility of the recognised germ being carried by some unknown agent of communication, yet on making a strict examination of the styres where they have been kept, and noticing the filthy condition of them, have thought that possibly too little notice has been taken of these conditions in accounting for this disease, and probably, also, more may be attributed to such bad sanitary conditions than their being merely accelerating agents. That there is a disease of the pig of a Typhoid character closely allied, if not a different species of the so-called Swine Fever, which, to my mind, explains nothing, preferring the term *Pneumo-Enteritis Contagiosa* (Klein). I am quite aware that pathologists do not look upon the Typhoid Fever of man to be analogous to this Swine Fever of the pig, basing their reason in the differences manifested by the pathological appearances. May not these, however, be accounted for by the great differences in the two animals—viz., man and pig? Here I may state that, with all due respect and admiration to the great studies made lately by scientists in the Germ Theory of Disease, I must, however, be pardoned in saying that I am afraid that, led away by their enthusiasm, they are apt to take too little notice of the clinical history of a disease, the great tendency now being to explain disease by the presence of some bacillus or bacterium. I am quite willing to admit that by far the greater number of cases of Swine Fever are produced by contagion and infection.

And now, gentlemen, I shall endeavour to give you the symptoms of this disease as they have presented themselves to me. On examining pigs affected in the first stages, I have noticed that there is a great inclination to lie about and huddle together if there are many pigs. Loss of appetite, staggering gait, rapid breathing, sometimes husky cough; and I may say that I noticed on one occasion that Laryngitis was the first symptom, then diarrhoea or constipation, depraved appetite, and increased thirst, with or without pimples on the skin. If, however, I have seen them when the disease has been of longer duration, they have presented a wretched appearance. Rapid emaciation, with marked diarrhoea, a mucoid purulent discharge running from

the eyes, causing them very often to be quite closed, standing on the toes, due to paralysis of the flexor muscles; in a semi-comatose condition, often uttering delirious grunts; on being made to rise, marked paralysis of hind extremities. In fact, after noticing the symptoms of a well-marked case, there should be no difficulty in detecting this disease. But it happens, however, that one occasionally meets with cases in which there is great care required in diagnosis before giving an opinion as to whether pigs are the subjects of this disease or not.

I shall now remind you of the morbid anatomy of this disease as it has presented itself to me on making a *post-mortem* examination. Some experimentalists have, I believe, produced the disease by the inoculation of fluid taken from the peritoneal cavity, and a microscopic examination of the cultivated liquids has gone to prove that they are the growth and development of a kind of bacterium, having in itself all the characters of the *Bacillus Anthracis*, but I believe there still exists a doubt as to the exact species of bacterium which produce this disease, and, therefore, I do not think that I can do better than refer you to the recent pathological experiments conducted by Dr. Billings, Director of the State University of Nebraska, U.S.A., which experiments I have no doubt many of you have read, as they have been recorded in the *VETERINARY JOURNAL* of February, October, and November, 1887, and have furnished us with a lot of recent pathological research. There is one paragraph which I have taken the liberty to bring before your notice: it occurs on page 362, vol. xxv., of the November Journal, and runs thus: "That it is of great practical interest to the veterinary profession whether the disease in England described by Klein as *Pneumo-Enteritis Contagiosa*, and that described by Schutz, of Berlin Veterinary School, as *Infectious Pneumonia*, called in America *Hog Cholera*, or *Swine Fever*, are due to one and the same micro-organism, or whether these two, apparently so similar organisms in their external characteristics, still differ in their pathological action sufficiently to account for the enterical lesions in the American disease, which Schutz does not mention having seen in Germany, though they correspond to those described by Schutz in all their chief essentials; so that you see, gentlemen, there is at present still room for doubt as to whether we have not a variation of species of one and the same disease, possibly influenced by climate, breed, and conditions to which the pigs are exposed. On touching on the *post-mortem* appearances of this disease, I do not think I can do better than give you an account of the *post-mortem* appearances which presented themselves to me on making an examination of a pig sixteen weeks old, which had been ill three weeks. There was no discoloration of the skin; there, however, may have been during the earlier stages. External appearances of bowels natural, saving a few dark red patches seen through the peritoneum, where I found internal ulcers of the most advanced stage. Mesenteric glands congested; stomach, externally, normal—internally, small and pale. The intestinal track was somewhat thickened throughout; the cæcum and the ileo-cæcal valve likewise. The colon presented a great deal of effusion under the mucous membrane; ulcers, petechial spots, and patches scattered through the colon; rectum somewhat congested. The kidneys presented a pale appearance, covered with petechial spots; their structure did not appear much altered from the normal. Liver—Glisson's capsule studded with cloudy patches, attached to the diaphragm by a partially organised exudate of apparently a serous nature. The structure of this organ seemed somewhat softer than natural. Many of the lobules of the lungs were in a perfect consolidated condition. The lungs were attached to the parietal pleura, and to the anterior face of the diaphragm by a semi-organised exudate; heart pale, and of a soft consistence, free from any sub-endocardial extravasations. I

may here say that I have never before noticed that the lungs and liver adhere to the diaphragm and costal pleura, as in this case. Pigs killed in the earlier stages of this disease, I have generally found present the following appearances. Skin may, or may not, be discoloured; when so, I have noticed it to present a purple rather than the scarlet discoloration so often described; stomach and bowels congested in varying degree; Peyer's patches and solitary glands becoming considerably enlarged and prominent, and standing up above the surface. They are of a greyish-white or palish-red colour, with vascularity of the surrounding membrane. Liver has invariably a number of cloudy swellings on Glisson's capsule, its structure generally being somewhat softened: the kidneys sometimes presenting petechial spots on external surface, but in the earlier stages often appear healthy, as far as I have been able to judge. The heart sometimes presents sub-endocardial staining, sometimes remaining free; lungs generally consolidated in a greater or lesser degree, according to the length of duration of the disease, the costal pleura often showing extravasations beneath it. To clear the country of this disease, I would advise compulsory slaughter of all animals we are satisfied are affected. The remainder I would have left in a place to themselves, given plenty of good food and exercise, not confine them in styes badly ventilated and undrained, where, probably, the slaughtered ones have been kept. Should advise the cleaning-out of all styes, with thorough application of lime-wash, to which has been added some carbolic acid, or other disinfectant.

Mr. HEATH congratulated the essayist on the excellency of his paper from a scientific as well as practical point of view. He quite agreed with him in thinking that there were two kinds of Swine Fever, one arising from drinking impure water, uncooked house waste, and bad sanitation; the other from contagion. In the one case the disease was very similar to human typhoid, in the other the lungs also became affected. As an aid to diagnosis he relied very much on the thermometer, as there was always a considerable elevation of temperature; the voice of the pig, as the disease goes on, becomes altered. He believed permanganate of potass to be an excellent remedy for Swine Fever, and related several instances where its use was clearly attended with great benefit. He believed if herds of pigs were generally treated with this agent, the course of the disease would be stayed.

Mr. GOLLEDGE said errors in feeding, especially where quantities of salt or soda became mixed with the food, would produce a disease very similar to Swine Fever. But there were distinctive differences, which soon became apparent to the experienced practitioner. When pigs died from eating salt the ulcers in the intestines were more like scalds than the deep characteristic ulcers of Swine Fever. Another difference also was of importance; in the former case, the ulcers were always situated on the rugæ of the mucous membrane. When investigating for this disease too much reliance must not be placed on the thermometer, for although it was highly important to know the temperature, yet it must not be forgotten that a considerable elevation also takes place for many other diseases. He did not believe in the spontaneous origin of Swine Fever; no combination of filth, bad air or water, without the actual introduction of the virus itself, would, in his opinion, produce it.

Mr. BURTON, from his experience, was able to agree with nearly all the main principles of the paper, which he thought very able and practical. Boracic acid was a very good remedy for Swine Fever. He believed the disease might arise spontaneously; when it was propagated by infection, the germs were generally inhaled. Heat, filth, and bad sanitation tended very much to its spread. More care should be taken in disinfecting markets.

Mr. ELDER said it was very difficult at all times to trace the origin of an

outbreak to contagion. He was beginning to doubt whether the disease might not arise spontaneously. The mortality from Swine Fever was very great. Rats, he believed, often conveyed the contagion; they were always migrating from one sty to another.

Mr. OLIVER did not agree that the disease was spontaneous; it often existed in undeclared places, and this because unsuspected centres of infection.

The SECRETARY said it was unanimously agreed to by all present that the only way to get rid of the disease was by the stamping-out system—wholesale slaughter of all pigs on the premises, both diseased and healthy, destruction of all woodwork near the ground in styes, also feeding-troughs, and thorough disinfection; by this means only could the disease be cleared from the country, and in the end was by far the most economical. He did not entertain the idea that it had a spontaneous origin, for there were still large tracks of country where pigs were kept in every conceivable form of filth, and yet no Swine Fever appeared amongst them.

After replying to the various observations, Mr. Oliver received a marked and cordial vote of thanks for his paper, and the President for his able and courteous conduct in the chair.

It was resolved to hold the September meeting in Plymouth.

The members then dined together, and a most enjoyable evening was spent.

W. PENHALE, *Secretary.*

ROYAL (DICK'S) VETERINARY COLLEGE.

THE annual presentation of prizes to the students of the Royal (Dick's) Veterinary College took place on May 16th, in the council chambers. Sir Thomas Clark occupied the chair, and there were also present Sir James Gowans, Bailies Cranston, Turnbull, Walcot, and M'Donald; and Councillors Macpherson, Tait, and Macdougald.

HIS LORDSHIP said they had met together for the purpose of distributing the prizes gained by the students of the Royal (Dick's) College. He was glad to know that many things which had happened during the past year were so extremely satisfactory. The building was now completed, and the appliances in the hands of the students were such that there was no other institution so well founded as the Royal Veterinary College with these appliances, and, in addition, they had a number of first-rate professors, who were able to teach the veterinary science to them by the highest methods. The studies of the students had been quite up to the average of the best years. At this time last year there were some differences amongst the examining board, the professors, and the students also, but these differences were a matter of the past, and he would never have referred to them at all if it had not been that the state of harmony which now existed was so different in contrast with the state of things which existed last year. The Examining Board had been very much changed, and one circumstance had occurred which was calculated to bring about a desirable relationship between the Examining Board and the students in time to come. The head of the Royal Scottish College of Veterinary Surgeons was a gentleman in whom every one had absolute trust. The behaviour of the students during the past year was everything that could have been desired. He had to congratulate the students and professors upon the changes that had been brought about during the past year in the Examining Board, both in its construction and the method in which the examinations had been conducted. They had to congratulate the Town Council, as the governing body, and the whole body of professors and students, and public, upon the admirable manner in which the college was conducted. His lordship then called upon Professor Walley to make a few remarks concerning the distribution of the prizes.

Professor WALLEY said the distribution covered a period of three years—from the session of 1885-86 to the present time. There was another thing worthy of mention, and that was, they were very pleased to say they had, acting in concert with all the Scottish colleges, been enabled to do away with the entire summer session. (Cheers.) They found that teaching their students during hot weather was rather too much.

Bailie CRANSTON said he believed the new buildings were second to none. He hoped it would better their condition, and enable them better to pursue their studies.

Sir JAMES GOWANS said he did not know that there was any profession in which the duty was higher than the care of attending to animals. He had no doubt that their little brush had passed away, and it might tend to make matters smoother in the future.

The prizes were then distributed by the Lord Provost, after which Professor WALLEY proposed a vote of thanks to the Highland Society for their continued support and the number of medals for class competition. It was an encouragement for men to study a subject in which the Highland Society took such a deep interest. Bailie CRANSTON seconded the motion.

Professor WALLEY also proposed votes of thanks to Mr. Harris for his gold medal and to the managers of the Edinburgh Street Tramways Company for allowing the students the privilege of attending the stables at the sick cases.

Dr. AITKEN moved a vote of thanks to the Lord Provost for the great interest and care he had taken in the college during the time he had been engaged in the affairs of the city. The motion was unanimously agreed to, and the proceedings terminated,

The following is the prize-list:—Mr. Mullan, Dublin, gold medal for chemistry, silver medals for materia medica, junior anatomy, and morbid anatomy; Mr. Mullan also carried off the £21 bursary for the highest percentage of marks in the various classes since 1885; Mr. Gold, gold medals for cattle pathology and veterinary medicine and surgery, and silver medal for botany, 1886; Mr. Clayton, silver medals for veterinary medicine and surgery, cattle pathology, and silver medal from the Edinburgh Veterinary Medical Association for the best essay; Mr. Breakell, Garstang, silver medal, chemistry, for session 1885-86; Mr. Braes, silver medal for general merit in the various competitions, 1885-1888; Mr. Clarkson, bronze medal for general merit in the various competitions, 1885-1888. Medals for the present session:—Mr. C. E. Gray, gold medal for physiology; W. Ackroyd, gold medal, senior anatomy; Hewison, gold medal, chemistry; William Hewison, silver medals for junior anatomy and botany; A. Dowdall, silver medal, physiology; H. S. Clark, silver medal, chemistry; Bell, silver medal, junior anatomy; amateur competition in veterinary medicine and surgery, bronze medal, William Jobson; honourable mention, William Tod.

THE NEW VETERINARY COLLEGE.

ON May 16th, Principal Williams distributed the prizes to the successful students in the lecture hall of the College. He was received with prolonged applause, and said he had great pleasure in distributing the prizes at the termination of another session. He could say that the work of the session had been up to the average. The papers in the competition for horse pathology were above the average, and he could safely say these were the best papers he ever had read in his life. The session had been a longer one than usual, but he thought that the new arrangements would be of great advantage to the students as well as to the teachers. They also gave the students from the present time till October to see the practice of practitioners in the town or country, and great advantages would accrue to those

who embraced the opportunity. He then referred to the necessity of grappling with the elementary subjects of the course and to the successful prosecution of their studies during the session. The students had won the first two Fitzwygram prizes, and nearly carried off the third prize. In the course of distributing the prizes, the Principal said they were very much indebted to the Highland Society. He could not help referring to his own teacher, Professor Dick, because he was about the only teacher who represented the old school. Professor Dick must have been a brave man; for three mortal years he lectured to only one student. It required a man of great determination to do that. It was encouraging to them to know that for many years the class had been gradually growing. This was his twenty-first year in Edinburgh, and great improvements had occurred since then. The classes had become larger and larger, until now they numbered nearly two hundred students. There was plenty of opening for all, as all parts of the world were calling out for veterinary surgeons. The veterinary surgeons had increased their weight, and responsibility, and position together within the last few years. Their profession had been recognised by the Government, and a number of their professional brethren had been decorated with a variety of honours. In conclusion, he thanked them very much for their attendance, and trusted that all who had to go in for their examinations would pass successfully.

Professor Lewis proposed a vote of thanks to Principal Williams, after which the prizes were distributed.

The following is the prize-list:—Principal's £20 prize, S. Cameron and W. Eaton—equal; horse pathology, Alfred Bate; cattle pathology, James Murray; morbid anatomy, Alfred Bate; senatus of museum, Alfred Bate and F. W. S. Clough; anatomy, E. F. de Yong; physiology, E. J. de Yong; histology, C. Ward; chemistry, J. H. Parker; practical chemistry, John Cockburn; elementary anatomy, J. H. Parker; botany, J. H. Parker; veterinary hygiene (Principal Williams' medal), T. H. Middleton; Professor W. O. Williams' medal, J. R. C. Smith; Edinburgh Veterinary Medical Association medal, James Murray; for practice, J. Appleyard and J. Borthwick—equal. Certificates of merit—A. Bate, F. W. S. Clough, G. Craik, G. Scoon. First-class Certificates for Practice—J. Appleyard, Borthwick, A. Bate, F. W. S. Clough, G. Craik, G. Scoon, H. M'Kee, T. Lilico, J. Dunnett, W. F. Egan, W. Eaton, J. Murray, H. R. Love, F. W. Granfell, W. Kidd, E. Wilkinson, A. Shawcross, J. F. Carson, F. L. Carter, and J. W. Schofield. Second-class Certificates of Merit—A. Duvall, J. Rigby, S. Cameron, E. H. Schofield, J. Garland, and G. M. Yardley. Last Summer Session—Botany, J. F. Clanchy; medical chemistry, J. Parker and E. F. de Yong—equal; and materia medica, E. F. de Yong.

ONTARIO VETERINARY COLLEGE.

THE closing exercises and presentation of prizes in connection with the Ontario Veterinary College, took place in Richmond Hall on May 2nd. Dr. Smith, Principal of the College, presided. Besides a number of ladies, who occupied seats on the platform, there were present—Dr. Daniel Wilson, of Toronto University; Dr. Thorburn, Dr. Canniff, Dr. Duncan, Rev. Dr. Wild, Ald. Dodds, Frankland, Ritchie, Piper, Swait, Morrison, and Irwin, Dr. Shaw, Dr. Cowan, Dr. C. Smith, and Dr. Lloyd.

The CHAIRMAN, on rising to welcome the visitors, was greeted with loud and long-continued applause. No doubt, he said, they were all anxious to hear the names of those who had passed their examinations successfully. The names of more than a hundred gentlemen were read out.

SENIOR.

Pathology—F. Booker, silver medal; N. H. Allis, second; J. E. Wilson, third. Honours—Ackland, G. T.; Anderson, J. P.; Auslin, D. G.; Balliet, A. H.; Burger, Will; Campbell, W. D.; Carpenter, Tom; Chase, J. M.; Cook, F. W.; Clute, H. P.; Cornell, C. P.; Coutts, J. J.; Gruber, C. D.; Gable, E. E.; Hill, James A. T.; Inger, J. D.; Hoffman, W.; Johnston, B.; Kennedy, J. T.; Lawson, J. A.; McGregor, J. D.; McDonald, F.; Merillat, L. A.; Paget, H. A.; Redhead, R.; Rowe, H. M.; Rossiter, E. W.; Rowlin, G. H.; Russel, W. T.; Shepard, E. H.; Sherwick, F. N.; Smith, R. V.; Smythe, T. H.; Thompson, L. H.; Vanantwerp, E. A.; Walker, J. J.; Wicks, A. J.

Anatomy—Silver medal, Will Burger; second prize, J. J. Coutts; third prize, E. H. Shepard. Honours—N. H. Allis, A. H. Balliet, T. Babe, J. W. Bland, F. Booker, T. Carpenter, J. M. Chase, E. Edwards, J. J. Findlay, E. E. Gable, A. G. Highway, E. W. Hagyard, C. W. Haworth, B. Johnston, A. W. Jackson, A. E. James, J. A. Lawson, L. A. Merillat, E. D. McQueen, G. H. Rowlin, H. M. Rowe, E. W. Rossiter, W. T. Russel, Payson Schwin, F. N. Sherrick, A. W. Smith, Ed. Shafter, A. A. Vanantwerp, J. J. Walker, J. E. Wilson, A. G. Wicks.

Entozoa—Prize, B. Johnston. Honours—Will Burger, J. M. Chase, James Campbell, J. J. Coutts, C. W. Haworth, S. W. Jackson, J. T. Kennedy, S. D. McGregor, L. A. Merillat, F. N. Sherrick, A. G. Wicks.

Dissected Specimens—Gold medal given by the Toronto Industrial Exhibition Association, Will Burger; second prize, 30 dols., Joseph Thompson; third prize, 20 dols., A. H. Balliet.

Physiology—Lawson, John A., silver medal; Merillat, L. A., second; Burger, W., third. Honours—Booker, F.; Campbell, James; Chase, J. M.; Coutts, J. J.; Haworth, C. W. J.; Powell, J. N.; Rowe, H. M.; Shepard, E. H.; Thompson, T. H.; Wicks, A. G.

Microscopy—Rowe, H. M., first; Carpenter, T., second; Coutts, J. J., third. Honours—Campbell, J.; Chase, J. M.; Cornell, C.; Findlay, J. J.; Haworth, C. W. J.; Inger, J. D.; Jackson, A. W.; Johnston, B.; Merillat, L. A.; Power, R. H.; Smythe, T. H.; Thompson, L. H.; Wicks, A. G.; Wilson, J. E.

Chemistry—J. J. Coutts, first; O. Rush, second; H. M. Rowe, third. Honours—J. M. Chase, G. Collins, J. J. Findlay, B. Johnston, C. D. Morris, John E. Wilson.

Best General Examination—Gold medal, given by the Ontario Veterinary Medical Association, E. Payson Schwin, Indiana, U. S. Honours—N. H. Allis, A. H. Balliet, F. Booker, W. Burger, T. Carpenter, B. Johnston, J. D. McGregor, L. A. Merillat, H. M. Rowe, J. E. Wilson.

Materia Medica—First prize, B. Johnston; second prize, L. A. Merillat; third prize, J. J. Coutts. Honours—G. F. Ackland, J. P. Anderson, S. H. Balliet, F. Booker, W. Burger, F. W. Cook, I. Carpenter, James Campbell, H. O. Dengler, E. Edwards, A. W. Jackson, A. E. James, J. B. Kennedy, J. C. S. Lawson, D. E. McLean, J. J. Miller, C. D. Morris, J. H. Powell, W. T. Russell, E. Schuftor, E. H. Shepard, F. N. Sherrick, E. P. Schwin, R. V. Smith, A. G. Wicks.

JUNIORS.

Anatomy—Silver medal, H. H. Jenkins; second prize, M. M. Leach, J. W. Manchester (equal); third prize, W. Petrie, M. C. Tuttle (equal). Honours—M. T. Bechtel, J. Buckham, W. H. Blanchard, D. Dewey, J. E. Duncan, Fred. Gallinough, W. T. Gilchrist, W. F. Higbee, W. D. Hammond, W. Hamilton, A. R. Howard, J. H. Johnson, W. J. Johnson, T. King, A. C. Lloyd, W. B. McMicken, H. B. Murray, W. J. Olds, W. H. Pickering, C. W.

Purcell, E. Richardson, E. Sturge, W. S. Stevenson, J. W. Tulley, P. Thwaites.

Pathology—Duncan, J., first prizeman; Alexander, T. G., second prizeman; Sturge, E., third prizeman. Honours—Bingham, J. E.; Buckingham, J.; Beattie, F. S.; Campbell, P. N.; Campbell, Andrew; Dewey, D. D.; Duncombe —; Gilchrist, W. T.; Glendinning, C. G.; Hedges, A. M.; Hopkins, F. M.; Hamilton, W.; Howard, S. R.; Hongendobler, J. O.; Henry, E. W.; Harris, W. H.; Jenkins, H. H.; King, Thomas; Lloyd, A. C.; Leech, M.; McMicken, W. B.; McQuate, T. C.; Marshall, J. W.; Medill, John; Manchester, J. W.; Murray, H. B.; Pickering, W. H.; Purcell, C. W.; Petrie, W.; Richardson, E.; Simons, S. W.; Spensley, F. V.; Smith, Charles H.; Stevenson, W. S.; Thwaites, P.; Tuttle, M. C.; Tremleth, W. B.; Waller, H. N.; Williams, F. E.

Physiology—Sturge, E., first prizeman; Jenkins, H. H., second prizeman; Purcell, C. W., third prizeman. Honours—Buckham, James; Hamilton, W.; Hedges, A. M.; Henry, E. W.; Hongendobler, J. J.; Hopkins, F. M.; Howard, D. R.; King, Thos.; Lloyd, A. C.; Manchester, J. W.; Thwaites, Percy; Trenleth, W. B.

Chemistry—Sturge, E., first prizeman; Petrie, W., second prizeman; Stevenson, W. S., third prizeman. Honours—Brown, Dewey, Jenkins, King, Lloyd, Purcell.

The presentation of medals and prizes followed. If one might judge from the applause with which the medallists and others were greeted, the students as a whole are well pleased at the result of the examinations.

ADDRESSES TO THE STUDENTS.

At the conclusion of the presentation of the prizes the chairman called on Dr. Daniel Wilson to address the students and their friends.

Dr. WILSON said he was pleased to be present at another annual presentation of prizes to the students of the Ontario Veterinary College. The fact that this college stands at the head of similar institutions on this continent must be gratifying not only to the citizens of Toronto, but also to Canadians at large. He was glad to see the hearty, whole-souled way in which the students greeted the announcement of the names of the medallists and others. He was sorry to say that there were those who advocated doing away altogether with prizes in colleges on the ground that such a practice leads to jealousies and heart burnings. But their contentions had little foundation in fact, as was shown by the hearty applause of the students as the names were announced.

Ald. FRANKLAND spoke at some length, impressing on the students the importance to the country of such men as they. There was a grand future for stock-raising on this continent, and they looked to the veterinary surgeons more than to any others to make it a success.

Ald. DODDS also made a few appropriate remarks.

Mr. CARPENTER, on behalf of the students, then presented Dr. Smith with a magnificent picture of the graduating class.

Dr. SMITH replied in suitable terms, after which short addresses were delivered by Mr. Ira Morgan, President of the Agricultural and Arts Association; by Dr. A. O. F. Coleman, of Ottawa; and by Dr. W. Cowan, of Galt.

ROYAL AGRICULTURAL SOCIETY.

At the Monthly Council, held on May 2nd, Sir JOHN THOROLD (Chairman) stated that the Committee recommended that Mr. Frank Low, M.R.C.V.S., of Norwich, be appointed Provincial Veterinary Surgeon for the County of Norfolk to supply an existing vacancy.

Professor BROWN had presented the following report:—

PLEURO-PNEUMONIA.—During the three weeks ending April 21st there were thirty outbreaks of Pleuro-pneumonia reported in Great Britain. Thirteen of these were in England and seventeen in Scotland. The number of cattle attacked was 163, of which eighty-five were in England and seventy-eight in Scotland. From the published returns it appears that under the Slaughter Order of March 6th, 1888, there were, during the above-mentioned period, 943 healthy cattle, which had been in contact with the diseased, slaughtered on, or removed for slaughter from, the infected premises.

SWINE FEVER was, during the first three weeks of the past month, more prevalent than for some time past, but less so than during the corresponding period of last year. In the period mentioned above there were 311 outbreaks reported, as compared with 467 last year. The number of swine attacked was 1,750. Of these 824, or less than half, were killed, 611 died, and eighty-nine are said to have recovered.

ANTHRAX.—Twenty outbreaks have been reported during the three weeks above referred to, and fifty-one animals attacked. Thirteen of the outbreaks were in England and seven in Scotland, while of the animals attacked thirty-nine were in England.

Lord EGERTON OF TATTON reported that the joint deputation from the Society and the Royal Veterinary College, appointed at the last meeting of the Council, had had an interview with the Lord President and the Home Secretary on April 24th. His impression was that the Home Secretary was, in the first instance, the person to decide the meaning of the word "experiment" under the Act. He thought the Home Secretary seemed desirous, if possible, to find a loophole for the veterinary surgeons if the latter would avail themselves of it. The question was, "When does an experiment cease to be an experiment?" The Home Secretary had so far enlarged the answer he had given to his (Lord Egerton's) letter as to say that an operation would cease to be called an experiment when there was a *bona fide* desire to benefit the animal without any belief or knowledge one way or the other. But the great difficulty seemed to be that the head of the Agricultural Department continued to regard his operations for Swine Fever as "experiments," whereas, if veterinary scientists would only drop scientific words and not use words that brought them under an Act of Parliament, but simply treat pigs, it seemed to him that by the consent of the Home Secretary this difficulty might be got over. It was suggested by the Lord President that a legal decision should be obtained in a court of law. But whereas there was a reasonable amount of unanimity about the means to be adopted, yet, having regard to the wording of the Act, veterinary surgeons were not prepared to say in court that this treatment of Swine Fever was not an experiment. Could Professor Brown, having heard what the Home Secretary said, recommend veterinary surgeons to adopt in the country this treatment for Swine Fever, which he was so anxious should be carried out?

Professor BROWN said that the word "experiment" stood altogether undefined in the Act, as he had pointed out to the Home Secretary, and, until an authoritative decision on the subject had been obtained in a court of law, nothing could be done. Where a man treated an animal for the benefit of that animal, that was not an experiment in the scientific sense; but where he sacrificed a particular animal, not caring about its life, nor wishing to benefit it, that distinctly was an experiment. He had also pointed out that, as the Act stood, everything which was done without a distinct knowledge of what the result would be—everything that was done for the purpose of trying something—was an experiment. So long as a veterinary surgeon, acting under his (Professor Brown's) direction without having any clear certainty of the result (possibly only a certain amount of hope), rendered

himself liable to proceedings by the Anti-Vivisection Society, or by any sensitive person who happened to stand by at the moment of the operation, he was quite certain that no practitioner would incur the risk.

Mr. DENT was very glad to find that the views of Professor Brown as to the advisability of deciding the matter in a court of law had received the endorsement of the Lord President, because he did not think the difficulty would ever be got over without a prosecution. He thought the Agricultural Department ought to instruct Professor Brown, if he had this belief in the excellence of his preventive measures, to put them into force, and that they ought to bear the expenses of any prosecution that might arise. He would even go further, and say that if the Government would not perform that duty, he thought that this Society might very well undertake it. He held that it was really and truly the duty of the Department to try any reasonable remedy for Pleuro-pneumonia before they forced local authorities to the slaughtering not only of diseased animals, but of healthy animals which had been in contact with them.

Earl SPENCER said that, as far as he could see in regard to this matter, it was on one side a matter of conscience on the part of the veterinary surgeons. It appeared to him that the Government could hardly be expected to be responsible for any number of prosecutions that might arise throughout the country. This showed the necessity of having these experiments conducted in a scientific way, where they could be done as experiments. Professor Brown had been trying experiments on swine. He imagined that there could be no difficulty in getting licenses for veterinary surgeons in different parts of the country to carry out these experiments. They might properly be undertaken by the Government, or the Treasury might advance a sum of money to the Department to get them tried in a proper manner.

Colonel KINGSCOTE ventured to say, as one of the deputation, that anything more unsatisfactory than the outcome of it could not possibly be. He could not agree with Mr. Dent that this Society should undertake to defend any prosecutions that might be taken against persons performing inoculation experiments. The Government might have taken another view, and got the word "experiment" altered in the Act. He really thought that, if veterinary surgeons were to have any help, the Home Office should give them leave and license to carry out these experiments.

Professor BROWN, in reply to Lord Spencer, said that for some time he had had a license, and he could not therefore himself be prosecuted. There were certain districts where the local authorities did not slaughter the swine. He desired to select about six of these districts, and give the inspector of the district instructions to carry on the experiments. Everyone would say they were to try something new, and wherever the word "try" was used it meant an experiment. He had been told that he would not be justified in employing any assistants who were not licensed, and it was on that ground that Professor Penberthy had been threatened with prosecution. After what Lord Spencer had said, he had not the slightest objection to make out a list of persons and apply for licenses for them, in order that they might carry on the work without risk, and he would take steps in the matter immediately.

Reviews.

QUARTERLY REPORTS UPON THE EQUINE DISEASES OF THE PRUSSIAN ARMY.
L. SCHUMACHER. (Berlin, 1887.)

We greatly regret that the increasing demands upon our columns will not permit a more thorough review of these interesting reports, so we must content ourselves with drawing attention to some of the points in them which have struck us as being of special interest. We should have liked to be able to draw some comparison between the percentage of sick, etc., of the Prussian army horses with our own, but as no return is given of the total strength in horses for the year 1887, we have not the means ready to hand. The records would be more valuable from a statistical point of view if this omission were remedied. We notice that in some respects the Prussian classification of diseases differs from ours; for instance, we find Glanders, Leukæmia, Acute Rheumatism, and poisonings put under the head of general diseases.

Under Glanders five cases are reported for the year, four of which were destroyed and one cured. Of the four destroyed, two were found on *post-mortem* examination to be unaffected. The case "cured" is stated to have been undoubtedly one of Glanders; it is, therefore, not without a vague feeling of admiration that we draw attention to it. We have also another feeling which is not vague, but need not be mentioned. We now pass on until we come to Strangles. Under this heading an outbreak of an interesting character is recorded, with some valuable remarks by Dr. Schutz, of the Berlin Veterinary School. He says: "Strangles, particularly in old horses, may partake of the character of an epizootic infectious Sore Throat, without attacking the membrane of any other part. In these cases the behaviour of the lymphatic glands is not constant; sometimes they suppurate, at others they do not. The latter form of the malady is almost invariably mistaken for primary infectious Laryngitis." Dr. Schutz's opinion is supported by our own repeated experience. Thus, quite recently, a patient suffering from Strangles was by mistake put into a box near one occupied by a perfectly healthy pony which, owing to lameness, had been confined for three weeks previously. Shortly afterwards the pony developed feverish symptoms, with Sore Throat, and had a purulent discharge from the nose. In the discharge we detected streptococci. The man attending the pony also looked after a colt, which was quite healthy, and isolated from all other horses. Very soon this animal developed ordinary Strangles. We may add that the man never in any way came in contact with the original case. In the pus of all the cases streptococci were found, but as we have not yet concluded the examination of them, it is safer to leave the question of identity open for the present.

Poisonings.—Under this heading Veterinary Surgeon Straube reports the following:—He had read a "Contribution to the Medical Treatment of Roaring," by V. Levi and V. Chelchowski, and decided to employ their method, which consists in the daily administra-

tion by intra-tracheal injection of a 1 per cent. solution of strychnia, increasing the dose gradually until it reaches 15·0. By this means the authors claim to have cured a case of Roaring in thirteen days. The treatment was carried out until the seventh day, when the patient received 10 grammes, but when on the eighth this dose was repeated, symptoms of poisoning developed. The eyes of the patient were drawn upwards, it nodded its head constantly, trembled, and if a sudden noise was made it sprang nearly into the manger. The respiration was accelerated, and the body covered with perspiration. At a later period the horse fell and was seized with cramps. A solution of 0·1 of atropin was injected, and the paroxysms ceased for a few minutes—sufficiently long to allow the horse to be raised and supported. In a quarter of an hour fresh cramps necessitated a further injection of atropin, with satisfactory result. Next morning, beyond very slight twitchings, the horse was better, but the nervousness remained for several days. The reporter has no doubt that in recent cases the remedy has good effect, and states that in the one recorded improvement took place. He, however, suggests the necessity for care, because strychnine is a cumulative poison.

Colic.—During the five years ending 1887, there were 4,691 cases recorded; of these, 421 died—an average of 8·91 per cent. of those attacked.

Microbic Skin Disease. — Nineteen horses in a transport battalion were attacked with inflammatory skin disease, accompanied with obstinate ulceration, but without lymphatic symptoms. The following is a condensed report of one case. On the 20th June an ulcer of the size of a sixpence was noticed on the front of the lower joint of a hind leg; the edges were irregular, but not thickened. The bottom of the sore was reddish-grey, and covered with projecting granulations. These were tender and bled easily. There was a discharge of a considerable quantity of clear fluid. The ulcer increased to the size of a shilling. Later on a similar place was noticed on the skin of the fetlock of the other leg. In this one a small sinus was observed, from which, when pressed, a small, hard, yellowish grey mass protruded. This sore also grew in size. In consequence of a wound on the skin of its off fore leg, another horse became infected, and the ulcer grew to the size of a plate. The disease spread until seventeen more horses were attacked. Carbolic acid, iodoform, corrosive sublimate, and zinc produced no good results. In six cases scraping and actual cautery was tried, but in a few days the granulations cropped up again. The ulcers were ultimately cured with plumb. nitricum dressings. Microscopical examinations of the sloughs and granulations showed the presence of great numbers of cocci, isolated and in small masses. The white-blood and pus cells in the discharge were mostly completely invaded. Cultivations on sterilised media have been undertaken, but the investigation is not yet terminated, and will be reported upon later. Before we leave these records for the present, although the interesting cases are by no means exhausted, we desire to offer our thanks to our colleague, Professor Dr. Schutz, for their perusal.

REPORT OF OBSERVATIONS OF INJURIOUS INSECTS AND COMMON FARM PESTS. By E. A. ORMEROD. (London: Simpkin, Marshall and Co.)

The talented lady who has rendered agriculture so much service, by making a special study of the insects which prove so hurtful to plants and farm animals, has issued her report of observations for 1887. That year, owing to the prolonged heat and drought, was characterised by an unusual amount of various kinds of crop insects, and consequently there was much damage caused by their presence. The report has special reference to these, as might be expected. Veterinary surgeons will be more interested in the second part, which is devoted to a consideration of some of the insects that cause annoyance and injury to animals—*i.e.*, the ox and horse warbles, the ox gadfly, and the sheep's nostril-maggot. These are described and figured, and the measures necessary for protecting horses and cattle from the attacks of the flies are mentioned as simple and certain.

HOW TO PLAY THE FIDDLE. By H. W. and G. GRESSWELL. (London: W. Reeves.)

A notice of a work on the "queen of instruments" would, under ordinary circumstances, be altogether beyond the scope of the JOURNAL; but the production of a treatise on this subject by those connected with our profession is such an extraordinary circumstance, that we venture to bring it to the notice of those of our readers who may be desirous of learning, by means of well-written hints, how to manage one of the most difficult of musical instruments. Messrs. Gresswell have produced a very interesting and instructive little manual at the small charge of one shilling, containing more information than we have found in more pretentious, and certainly very much more expensive books. Indeed, the directions are so good that, with a little help from a teacher, any person of ordinary intelligence and application should make sound and rapid progress if he followed them. The best works have been consulted in preparing the little book, of which this is a second edition; and the greatest living master of violin playing—Herr Joachim, to whom it is dedicated—gives it its due meed of praise.

Parliamentary Intelligence.

House of Commons, May 1st.

LONDON CAB HORSES.

MR. H. VINCENT asked the hon. member for the Knutsford Division of Cheshire if the attention of the Metropolitan Board of Works had been directed to the evidence reported to have been given at Wandsworth Police-court on the 25th ult., by Mr. Humphreys, described as one of the inspectors under the Board, in the case in which the Royal Society for the Prevention of Cruelty to Animals prosecuted, that it was not cruelty to work a horse with Chronic Navicular Disease in a four-wheeled cab, and to his statement, when the learned magistrate took a contrary view and convicted the prisoner, that half the cab horses in London were in that condition; what duties Mr. Humphreys

was employed by the Board to discharge; and on what authority he made the allegation in question.

Mr. T. Egerton said that Mr. Humphreys was one of the veterinary inspectors appointed by the Metropolitan Board under the Contagious Diseases (Animals) Act, his duties being to report on all cases of diseased animals brought under his notice. All the inspectors appointed under the Act were properly qualified veterinary surgeons, who also carried on business on their own account. Mr. Humphreys appeared at the Wandsworth Police-court as a witness on behalf of a cab owner whose horses were under his professional care, and gave evidence, not as representing the Board, but in his individual capacity as a veterinary surgeon. In justice to Mr. Humphreys, it must be stated that he denied having made the direct statement as reported.

May 11th.

CONTAGIOUS PLEURO-PNEUMONIA.

Mr. HOZIER called attention to the increase of Pleuro-Pneumonia in cattle, and moved that no Committee of Inquiry into the subject would be satisfactory which was not specially empowered to conduct practical experiments with the view of ascertaining the value of inoculation.

Dr. Farquharson supported the motion, and the discussion was continued by Sir A. Campbell, Mr. Esslemont, Sir R. Paget, Mr. Barclay, Mr. M. Stewart, and Mr. C. W. Gray.

Mr. LONG said that the discussion which had taken place would have its due effect on the Government, but he could not on their behalf accept a resolution couched in such terms. He could not accept a resolution which would practically be to censure the Committee, even before they had reported, and he hoped the motion would not be pressed.

The House was then counted out, there being only twenty-nine members in their places.

House of Lords, May 14th.

RABIES IN DOGS.

The Earl of CARNARVON desired to trespass on their lordships' attention for a very few minutes while he put a question to his noble friend below him in regard to a much less exciting subject than that which had just engaged their attention. He wished to ask his noble friend whether Her Majesty's Government proposed to introduce any Bill or to issue any instructions for the more effectual suppression of Rabies in dogs, in conformity with the recommendations of the committee of that House who last year reported on that subject. There was one member of their lordships' House who last year was with them and this year was not with them in consequence of this mortal disease. The case was one which attracted great attention at the time. All the remedies of M. Pasteur were tried and tried early. Everything that medical skill could accomplish was done and the greatest courage was shown on the part of the sufferer, but all was absolutely in vain. A committee was appointed last year with reference to this subject, and the general conclusion at which that committee arrived was that they were prepared to accept the scientific conclusion that Rabies could only be produced by the bite of the animal and that there was no spontaneous generation of the disease. Consequently the possibility of dealing with Hydrophobia was brought within practical limits. Some countries, he might observe, had established a system of quarantine which had been completely successful.

After some remarks from Lord STANLEY of ALDERLEY,

Lord MOUNT TEMPLE was understood to express his regret that the Bill which he had presented to the House was necessarily confined to the metropolis. Whatever legislation was passed ought to extend to the whole country; and now that the Government were carrying through Parliament a great Local Government Bill greater power and improved machinery ought to be at the disposal of the new local authorities.

Viscount CRANBROOK sympathised with the views expressed by his noble friend behind him, but his noble friend would recognise that great differences of opinion prevailed and that there were many people who could not always be trusted to take proper steps or to submit to the rules laid down by authority. His noble friend had asked what the Government had done. They had issued orders under the Diseases (Animals) Act, to which dogs were now subject, giving permission to local authorities to deal with the question, of which these authorities had largely availed themselves. There had recently been a great decrease in the disease. He did not hesitate to express his own opinion that if muzzling were carried out effectively it would prove a complete remedy; but it would be almost impossible to enforce it. It was quite true that in certain countries the disease had been stamped out in this way. While in Mauritius the disease prevailed, in Réunion it had been completely stamped out, and there had been no case for years past. In a large district in Prussia a similar policy had proved successful. The Government had given powers to deal with the danger to local authorities, and he had just heard that at Birkenhead and other parts of Cheshire these powers had been employed. By the Bill now under discussion in another place the new councils would have extensive powers in this respect. He did not, therefore, think it necessary to introduce a Bill. He had before him a long list of places which had issued orders under the general authority given by the Privy Council. The Government had also, by the kind assistance of the authorities at Somerset-house, procured the endorsement on dog licenses of any symptoms of Rabies which might have developed themselves in dogs so licensed. This was a valuable precaution; but of course it was useless with regard to sheep dogs, hounds, and a variety of dogs in the case of which the license was not for each particular dog but for packs or a definite prescribed number. He would remind his noble friend that the police were already authorised to deal with suspected dogs, and, as he had already stated, considerable powers were vested in local authorities.

The Earl of FEVERSHAM hoped that the Government would in a future Session see their way to increase the tax on dogs, and so endeavour to diminish the number kept. Many of the dogs kept by people were not only of no use to anybody, but were a positive nuisance. If people could afford to possess dogs throughout the year they could afford to pay a higher tax on them.

Army Veterinary Department.

Gazette, May 2nd.

Veterinary Surgeon, First-class, F. Plomley retires from the service.

May 15th.

2ND LIFE GUARDS.—Veterinary Surgeon, First-class, A. Adrian Jones, from the Veterinary Department, to be Veterinary Surgeon, vice J. A. Rostron, deceased.

Veterinary Surgeon R. Butler has arrived in England on six months' sick leave from Burmah, and Veterinary Surgeons Dwyer, Kemp, and Braddell on privilege leave from India.

Obituary.

The profession has lost one of its best friends, and, socially, one of its most representative men, by the death of Matthew Harpley, F.R.C.V.S., which melancholy event occurred on the morning of the 23rd May, the immediate cause being a fit, though he had not been well for a long time.

Born in 1830, Mr. Harpley entered the profession in 1854, having studied at the Royal Veterinary College after a pupilage with his brother-in-law, the distinguished veterinary surgeon, John Field. He was gazetted to the Royal Artillery on the 24th April, 1854, and served with that corps throughout the Crimean War of 1854-55, being present at the battles of Alma, Balaklava, Inkerman, and siege and fall of Sebastopol, as well as the actions at Bulganac and Mackenzie's Farm. For these services he received the English medal and four clasps, and the Turkish medal. He served with the same corps during the Indian Mutiny of 1857-8, and was present at the action of Pandora, the storming and capture of Meangunge, siege and capture of Lucknow, capture of Ramporedussie; receiving the medal and clasp for Lucknow, and being twice mentioned in dispatches for special services.

Returning to England, he was transferred to the Royal Horse Guards in 1860, and remained with that regiment until he was gazetted to retired pay, with the honorary rank of Inspecting Veterinary Surgeon, in April, 1885, having attained the limiting age of fifty-five years. In 1865 he was elected a member of Council of the Royal College, and in 1872-3 he served as President, his connection with the Council being continued up to his death. He was a foundation Fellow, and from 1873 to 1882 was a member of the Examining Board for England, and also from 1877 to 1882 for Scotland. For many years, and at his death, he was a Governor of the Royal Veterinary College, in which he took a great interest, and assumed an active part in its management. Since his retirement from the army, he officiated as estate manager to Lord Carrington—an appointment for which his tact and excellent business manner well fitted him.

Greatly esteemed in his regiment, and appreciated for his sterling good qualities by all who knew him, both in and out of the profession, our deceased colleague did his utmost to enhance the reputation of veterinary medicine throughout his career—in the Council Chamber and in public, evincing the deepest solicitude for its welfare up to the very last. Though he did not venture to promote its scientific objects to any extent, yet he was indefatigable in his endeavours to advance these by aiding in reforms which had that result. His services to the profession have in this and other respects been great, and his name will long be remembered as one of those who raised it from comparative obscurity, and we had almost said ignominy, to a position equal to that of the other learned professions—one of acknowledged benefit to the community, and worthy of high recognition. Higher praise could scarcely be awarded.

As a mark of respect to his memory, the Annual Dinner of the Royal Horse Guards Club, of which he was Secretary, does not take place this year.

The death of Mr. Harpley makes the sixth that has occurred among the officers—active and retired—of the Army Veterinary Department in a short time, three being of officers belonging to the Household Cavalry.

The Secretary of the Royal College of Veterinary Surgeons reports the following deaths of members of our profession. In Castle Douglas, John Irving,

M.R.C.V.S., who graduated in 1840, and Robert McConnell, who graduated in 1873. In Enniskilling, William White, a graduate of 1844.

The death is announced of M. Tombeur, Director-Professor of the Veterinary School of Santa-Catalina, Buenos Ayres. He was a graduate of the Brussels Veterinary School, and in 1882, with two Belgian colleagues, he went to South America to found the above-mentioned institution in the Argentine Republic.

The Belgian journals also report the death of M. Hugues, a distinguished Army Veterinary Surgeon, and author of a number of valuable papers on veterinary medicine, surgery, and hygiene.

Notes and News.

FECUNDITY IN PIGS.—An enterprising writer in a Norwich paper has made some rather startling computations on the subject of pig-breeding. He has discovered that, if permitted, pigs will live from fifteen to twenty years of age; that they commence breeding when they are from nine to twelve months old; and that from one pair only in ten years, allowing only six to a litter, male and female, upwards of 6,434,838 pigs would be obtained; that is to say, that if, instead of three acres and a cow, a countryman started with some acres and a pair of pigs, he might, in the course of ten years, count their progeny by millions. This is not reckoning on any out-of-the-way basis, for the gentleman shows that in Leicestershire one sow actually produced 355 pigs in twenty litters; while he mentions that at the exhibition of the Highland and Agricultural Society of Scotland a boar was shown which, although only twenty months old, was already the father of 1,466 pigs. Here, then, is wealth for the million; all you have to do is to get your two pigs at the start off, and then let them increase and multiply. While you sleep you will insensibly be becoming the owner of six million piglets!

A PROLIFIC DOG.—A very remarkable case of prolific breeding comes to hand from Dorsetshire, a gentleman living on the outskirts of Dorchester having a retriever, still alive, which has produced no less than thirty-eight puppies in three litters—the first consisting of twelve, the second fourteen, and the last, a few days ago, a dozen again!

RABID DOGS IN PARIS.—From the report of Dr. Colin to the Sanitary Council of Paris, the number of mad dogs in the French capital has recently increased in a very alarming manner. This assertion is corroborated by M. Pasteur, who says that the number of persons bitten by rabid dogs in the Department of the Seine is daily augmenting. Indeed, the number of persons treated at his laboratory during the first three months of the present year was double that of the corresponding period of 1887.

PROTECTIVE INOCULATION FOR BLACK QUARTER.—Strebel, a veterinary surgeon practising at Fribourg, Switzerland, gives the results of protective inoculation against Symptomatic Anthrax in Switzerland and Austria, in 1885. In Switzerland, the operation was performed in the Cantons of Fribourg, Soleure, Grisons, Saint-Gall, Vaud, Uri, Obwald, Glaris, and Valais. In Austria, it was carried out in the principality of Lichenstein, the duchy of Salzburg, the Tyrol, and the Voralberg. In these different countries, it appears there were 13,952 cattle inoculated, and 35,135 non-inoculated. Of the former, 67 were attacked by the disease, or 0.48 per cent., while of the latter 759 succumbed to it, or 2.44 per cent. From these figures, it will be seen that the losses were five times greater among the non-inoculated than among the inoculated.

THE CATTLE PLAGUE IN SOUTHERN RUSSIA.—The first practical experiments with the object of effectually stamping out the Siberian plague among horned cattle and sheep were commenced at Odessa the other day by Dr. Mentchikoff and Dr. Gamalea, of the Odessa Bacteriological Station. The system pursued is that of inoculation after the manner of M. Pasteur. Forty merino sheep were inoculated with lymph of different degrees of strength. The virus obtained for the purpose of inoculation is to be administered three times in increasing quantities and strength, and the three operations are to be made within twelve days. How important it is for Southern Russia that every attempt should be made to arrest the ravages of the Siberian plague will be understood, when it is stated that in the district of Kherson alone during last year 3,000,000 sheep and 30 per cent. of the whole of the horned cattle perished from it. The loss to proprietors and peasants is estimated at upwards of £375,000.

ACCIDENT TO A MARE—A CORK LEG TO BE PROVIDED.—Mr. Bradley, of the Sheep Walk Farm in Elton, Cambridgeshire, had a valuable brown blood-mare, which was in foal, and in a meadow on his farm. One evening the mare did not come as usual to be stabled, and a search showed that she had somehow fractured her off fore leg. Mr. J. W. Gresswell, veterinary surgeon, of Peterborough, was at once sent for, and he successfully amputated the leg above the fetlock, and an hour afterwards the mare gave birth to a valuable blood-foal. Mare and foal are both doing well, and it is intended, if possible, to replace the amputated part of the leg with a cork substitute.

THE ARMY VETERINARY DEPARTMENT AT THE ROYAL ACADEMY.—Any of our professional colleagues who visit the exhibition of the Royal Academy now open, will, we feel sure, be much gratified with the beautiful statuette by Mr. Adrian Jones, 2nd Life Guards. The subject is a Red Indian on horseback, shooting a bison, and the skill with which the group is modelled, as well as the artistic pose of the figures, is very remarkable, and has, we believe, received much praise from those best qualified to judge. This is now the fourth year in which Mr. Jones has been fortunate in having his statuettes accepted for exhibition by the Royal Academy.

RABIES IN IRELAND.—For several months Rabies has been prevalent in the district of Tuam, and many persons have been bitten. In accordance with special instructions from the magistrate, the police recently made a raid on every farm in the division and shot all the dogs. This was decided upon as the only way in which the disease could be stamped out.

Correspondence.

SUBCUTANEOUS INJECTION OF SAVARY'S LIQUID ESSENCE OF MUSTARD.

M. DURIEN, veterinary surgeon of Bauquesne, Department of Somme, brought the matter before the notice of the Central Veterinary Medical Society of Paris on the 13th May, 1886. M. Durien prefers Savary's essence, on account of its uniformity of strength and facility with which it is procured. He makes one or more injections, as may be necessary, and as a vehicle uses alcohol or petroleum to 1 to 2 grammes of the essence. He finds that œdema will be produced over a square decimetre of surface, and claims for his method

that results will be obtained in ten minutes, whereas with the ordinary sinapism it takes about two hours, and even then not always successfully; that as compared with the ordinary sinapism the engorgement is as intense, but less painful and more lasting. To use his own words: "I would particularly draw your attention to this point, that in more than twenty cases I have only once found that an abscess supervened, and in this case I repeated the injection at a short interval; but cicatrisation took place very rapidly, and left no traces. I have performed the operation in all regions, but find it preferable to do so where the skin is thin."

The advantages M. Durien claims are:—

1st. That the essence being of uniform strength, the practitioner is certain of the result.

2nd. The results are immediate, a few minutes being sufficient.

3rd. Saving in time, six sinapisms can be carried in a very small volume.

4th. Economy, the price of the essence being small.

5th. No dressings are necessary.

M. Durien employs the essence of mustard in the following regions for the following diseases:—

1st. In the neck in cases of Vertigo or Ophthalmia.

2nd. In the chest and sides for heart-disease and pulmonary affections.

3rd. In the abdomen for Typhoid Fever, Enteritis, Colic, etc.

4th. In umbilical hernia round the circumference of the tumour, the hernia being reduced in two cases about the tenth day.

M. Cagny uses essence of mustard subcutaneously in doubtful cases of Glanders to assist diagnosis. In one doubtful case with enlargement of the sub-maxillary gland, painful swelling of the hind limbs, but without nasal discharge or ulceration of the Schneiderian membrane, he made two injections, one on each side of the chest, and in forty-eight hours the diagnostic ulcer and nasal discharge appeared.

J. A. NUNN, A.V.D.

VACCINATION AS A PREVENTIVE OF CANINE DISTEMPER.

SIR,—The remarks anent the above question in the VETERINARY JOURNAL have induced me to pen a few words.

I cannot imagine that any true pathologist could be guilty of the egregious blunder of connecting human Variola with canine Distemper—there is no more analogy between the two diseases than exists between chalk and cheese. It is true that in protracted cases of Distemper, when extreme debility is present, an eruption makes its appearance, due simply to the suspension of the skin secretory functions, associated with the low state of the vitality of the surface of the body; but I defy any living pathologist to prove that such eruptive outbreak is of a variolous nature.

For many years I have successfully practised inoculation as a Distemper preventive, with material obtained from a distempered dog; but this is totally different to the introduction of vaccine lymph—indeed, not one single authentic instance can be adduced to prove that the vaccine of human Variola has prevented canine Distemper.

J. WOODROFFE HILL, F.R.C.V.S.

Hastings, 15th May.

THE DUAL OFFICE OF EXAMINER AND COUNCILMAN.

SIR,—The above subject was referred to at the late annual meeting by several members, and much adverse criticism was advanced—criticisms, as they appeared to me, to be deficient in sound argument, and advanced

mainly by disaffected partisans who had had no actual opportunity of forming a correct opinion, nor possessed any experience as to how the machinery works in the Council. With the object of removing some of these misapprehensions, I think if the matter be ventilated in a becoming spirit some good may be produced.

The objections raised against the system seemed to rest chiefly on the assumption that the examiners, being members of Council, could propose and elect themselves irrespective of their fitness. To an outsider who may have had his judgment coloured by his prejudices, or who may be an idealist pure and simple, I admit it may appear to him at first sight feasible; but to the man of fair judgment, one who has not lost all faith in his fellow-man, especially in those representatives who have been chosen by the whole profession as men possessing honour and integrity, to such a one the idea would be scouted as unworthy of a moment's consideration. From the opinion I have formed, and the experience I possess, gained by close observation of its actual working inside the Council for a period of between twenty and thirty years, I have no hesitation whatever in saying that the Council select the men they consider the most suitable and best qualified for the various sections of the Examining Board, irrespective of their being members of Council or not; and, further, I have never known a member of Council influencing other members, nor to have voted in his own election for an examiner; but I have known innumerable instances of members abstaining from voting on election of examiners. Many matters are taken into our consideration when deciding on a person as an examiner, viz., his general and natural fitness; his knowledge and education; his intellectual capacity; his previous experience and training; his benevolent, kindly and patient manners; his powers of discernment, and the interest he takes in the profession; these and many other points are taken into our earnest and careful consideration. And I must also say that those members of our Council who are also examiners, are some of the best, if not the very best, members. They are the most regular in attendance, being thoroughly conversant with every matter that comes before the Council; they always take a deep interest in joining in the debates and assisting in elucidating every matter appertaining to the interests of the profession, besides their invaluable service in being referred to on examination matters; in short, they are the most useful members of the Council, and the Council cannot spare them. I think the general meeting confirmed this view, when about fifty were in favour of the dual office and about seven against it; and the emphatic answer given by the whole profession in re-electing Dr. Fleming (who, as every member of the profession knows, holds the dual appointment) by a larger number of votes than was ever recorded to a member of Council before, and nearly 100 votes more than was given him at his last election, surely this should be a convincing and satisfactory answer to everybody, unless they be hopelessly disaffected.

THOMAS GREAVES, F.R.C.V.S.

Manchester.

MR. GREAVES' COURT OF APPEAL.

SIR,—If I have hurt the feelings of your correspondent, a (nameless) F.R.C.V.S., by criticising the actions of the Council of the R.C.V.S., and by expressing the opinion that the Council and Examining Boards should be separate and distinct, I hope the injury done to him will only be of a temporary nature, because those gentlemen in the Council "possessing any feeling of self-respect" will not object to legitimate criticism of their labours on behalf of their professional brethren, and I do not doubt that in a few

years the profession will demonstrate that it is wrong in principle for an examiner to hold a seat at both the Council and Examining Boards.

Your correspondent is aggrieved because he has attended so many annual meetings and has never heard a vote of thanks proposed for the Council. Why has "F.R.C.V.S." never made the proposal, and thereby have atoned, to a certain extent at least, for his and our shortcomings? This could not have been more ridiculous than for a member of Council to propose and vote for himself as an examiner.

The last sentence in the paragraph relating to me, is unworthy of either a member of Council, an examiner, or a gentleman, and therefore I decline to take any notice of it.

H. KIDD, F.R.C.V.S.

Hungerford, 11th May, 1888.

[We have had considerable experience of Council business for many years, and can assert that we have never known a member of Council to propose and vote for himself as an examiner. It is evident that the profession generally prefer examiners on the Council. The advantages of their being present at the meetings far outweigh any disadvantages, if such exist. So long as teachers are members of Council, it is most essential that examiners should be also; the experience of last year fully demonstrates this.—ED. *V.J.*]

LANCASHIRE VETERINARY ASSOCIATION.

THE usual quarterly meeting of this association will be held at the Medical Institute, Hope Street, Liverpool, on June 13th. Tea at 5 o'clock. Business at 6 o'clock.

A number of communications are held over until next month, owing to pressure on our space.

Communications, Books, Journals, etc., Received.

COMMUNICATIONS have been received from S. Villar, Harrow; E. Clarke, London; Kay Lees, A.V.D., Newbridge; T. Assheton Smith, Calcutta; F. Smith, A.V.D., Aldershot; J. A. Nunn, A.V.D., Natal; A. J. Haslam, A.V.D., India; A. E. Macgillivray, Banff; J. W. Hill, Hastings; W. Greenhalgh, Leeds; W. Penhale, Barnstaple; J. Webb, Bishop Stortford; F. C. Mahon, Darlington; H. Kidd, Hungerford; J. T. Duncan, Ontario; A. W. Hill, London.

BOOKS AND PAMPHLETS: *C. Gresswell*, History of the English Thoroughbred; *Bulletin et Memoires de la Société Centrale de Méd. Vétérinaire*; *Bulletin des Séances de la Société Nationale d'Agriculture*; Report of the Minister of Agriculture for the Dominion of Canada; *W. R. Williams*, The Principles of Cancer and Tumour Formation; *F. S. Billings*, The Southern Cattle Plague of the United States.

JOURNALS, ETC.: *La Clinica Veterinaria*; *Der Thierarzt*; *Repertorium der Thierheilkunde*; *Recueil de Médecine Vétérinaire*; *Wochenschrift für Thierheilkunde und Viehzucht*; *Journal of the National Agricultural Society of Victoria*; *Revue Vétérinaire*; *Echo Vétérinaire*; *Giornale di Veterinaria Militare*; *American Live Stock Journal*; *Lancet*; *Edinburgh Medical Journal*; *Live Stock Journal*; *Mark Lane Express*; *London Medical Record*; *Hufschmied*; *Medical Press and Circular*; *Annales de Méd. Vétérinaire*; *Journal de Méd. Vétérinaire et Zootechnie*.

NEWSPAPERS: *Peterboro' Express*; *Times*; *Scottish Leader*; *Scotsman*; *Leeds Mercury*.





